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**Enhancing Young Readers' Oral Reading Fluency and Metacognitive Sophistication: Evaluating the Effectiveness of a Computer Mediated Self-Monitoring Literacy Tool**

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# Enhancing Young Readers' Oral Reading Fluency and Metacognitive Sophistication: Evaluating the Effectiveness of a Computer Mediated Self-Monitoring Literacy Tool

**by**

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**Dissertation**

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

**Doctor of Philosophy**

**The University of Texas at Austin**

**May 2006**

**DEDICATION**

To my mom, with love, appreciation, gratitude, and awe
For her strong devotion to education, independence, and her children

The art of mothering is to teach the art of living to children.
–Elain Heffner

A mother is not a person to lean on but a person to make leaning unnecessary.
–Dorothy C. Fisher

## ACKNOWLEDGEMENTS

The journey of a thousand miles begins with one step.

–Lao Tzu

An important part of comprehending how far one has come requires moments of reflection regarding where one began. Throughout the graduate school process, from application to graduation, I have had the support, encouragement, and love of family and friends, new and old. Through these acknowledgments, I hope to thank the individuals responsible for lifting me up when I was feeling low, helping me to move forward when the finish seemed far away, and supporting me in my research in whatever way possible so that I might fulfill this phase of my life and move on to whatever new goals await.

### FAMILY

I would like to start by thanking all of the members of my family who have been supportive and loving through this entire doctoral process. From the trips, visits, phone calls, and handling of unrelated issues, to the cards, letters, faxes, and morale boosters, my family has been with me every step of the way. Thanks to Jacintha and Tom for all things from late night advice, to reassurance, and especially for *When Scottish Pigs are Smiling!* Your constant encouragement and confidence in me was instrumental in helping me through these last four years. Thanks to Jocelyn, Jerry, and Abigail, for the early morning wake-up calls, the yearly rodeo break, and their prayers and support. Thanks to Jacquelynn, Mike, Sam, and CJ for the faxes, calls, and for providing me with lots of stories for my classes. In addition, thanks to my sisters for always being there for me and for helping me to stand tall when it would have been so easy to give up!

Thanks to Mark for his guidance and advice and for never letting me down when I had computer and technology issues that made me insane. Thanks to Matthew, Kathy,

Sophia, and Spencer for the emails and prayers. Thanks to Michael, KeriLyn, and Emmalise for the phone calls, encouragement, pre-proposal and pre-defense pep talks, and for the amazing show of love and support that I felt when they brought those ten intervention computers to my house!

Finally, thanks to my mom and dad for their unshakable faith in me and in my ability to get this done! I know that there have been many times that I have worried you or caused you to lose sleep during these last four years. Thank you for always believing in me and for constantly pushing me to succeed in this program and in life. We did it!

FRIENDS

I could never have even gotten so far as to come back to school if it were not for my friends. The encouragement that I received from Yvonne and Walter helped me to believe that this was something I could accomplish. Thank you! Throughout this journey these friends have remained true. I have also been fortunate enough to meet and befriend other individuals who provided their encouragement and support. Cindy, Jessica, Bonnie, Susan, and Alejandra – what a team! I am grateful that you were there at the beginning of this journey and blessed that you stayed with me through to the end. I love you, guys! And Ron, thanks for always lending an ear and being a great and unwavering friend. I could never have made it through this without you!

Thank you also to those friends who I have met through school, work, and fun, for your concern and care, including you, Caryn! Thank for listening to my ideas, complaints, and research highs and lows. I appreciate all of the feedback, collaboration, and support that I received from Lynn, Amy, Diane, Thea, Jen, Brett, Travis, Sam, Courtney, Mendi, Susie, Christi, Kristi, Christy, Theresa, Pam, Katie, Colleen, Doxey, Brad, Ladd, Amory, Jade, Candice, Eric, Kate, Ruth, Desiree, Angela, Kim, Jodi,

Candace, Chris, Johnny, Adam, Linda, Jeanne, Meaghan, Amber, Anita, Sylvia, Sharon, and Dauna – to name a few.

Finally, I would like to thank my great friend and perfect pack mule, Todd. Your help and support from the beginning of the intervention through the end of this entire dissertation process has been more powerful than I could have imagined. Your love, encouragement, and your pride in me are very special and wonderful gifts. Thank you!

COMMITTEE

I would like to thank my advisor, Diane Schallert, for all of the time and energy she put into helping me get through my research and this dissertation. Her strong devotion to her students is something that all professors should strive to emulate. Thank you, Diane, for all of the Sunday meetings, brainstorming sessions, and redirecting behavior talks. I could not have made it this far this fast without your support. Thank you to my committee, Dr. Schallert, Dr. Maloch, Dr. Svinicki, Dr. Koch, and Dr. Worthy, for accepting my proposal and believing in my research intervention.

TECHNOLOGY

If you read through this dissertation, you will discover that in order to complete the intervention journey, it was necessary to acquire computers, cameras, audio recorders, and many more bits of technology. I would like to thank Rob and Luis from the University of Texas at Austin Learning Technology Center for always being there for me with the equipment that I needed and encouraging words throughout my research summer. In addition, thank you to Luis and Ron for helping me organize the equipment and getting everything out to the school numbered and ready to go. Thank you to Todd for carrying all of the computers and equipment to all of the classrooms, and to Ron and Luis for setting it all up and helping me to remain “calm” throughout the set-up process.

Thank you, Mark, for allowing me to call at all hours to ask questions and try to figure out any and all technology problems that I encountered.

Thank you to the individuals who responded to my pleas for cameras, computers, headphones, and additional equipment. Thanks to Diane and Anita, for the use of your laptops, and a giant thank you to Michael for the ten computers that were used to complete this intervention implementation. I would like to thank the following individuals for the use of their cameras for eight weeks out of the summer: Brett (who actually bought a camera for me for this intervention), Michael, Qualls, Christy, Kristi, Kim, Audrey, Beth, Jocelyn, Pete, Evan, Thea, Amber, Brad, Ladd, Sam, and Walter.

TESTERS

Given the short summer school schedule and the magnitude of the research intervention, pre-testing and post-testing dates were limited and tight. A heartfelt and special thank you to all testers who gave up four of your days out of kindness (I did not pay these testers) to test all of the students involved in the research. Your testing was a wonderful show of support for me and my research endeavor. Thank you to my testers: Susan, Angela, Scott, Amy, Kate, Candice, Amory, Christi (who drove over 150 miles to test – twice), Katie, Jennifer, Angela, and Dauna.

BOOKS

I would like to thank those individuals who helped me gather books together to use throughout the intervention implementation. Without texts, this reading research study would not have survived. Thank you to my mom for collecting thousands of books for me and to Yvonne and Jacintha for making sure that they got to me in Austin. Thank you Melissa and Lynn for allowing me to borrow the remaining thousands of books that resulted in the 5,000 books used in my study. Thank you for your kindness and support!

SUMMER SCHOOL PARTICIPANTS

Of course, there would not have been a research intervention without participants. Thank you to all of the students who participated in my research and maintained such positive attitudes about the new technology that they used and the many tests that they had to take. I would like to extend a big thank you to the principal of the summer school, Ms. Brinkman, and to the twelve teachers involved in my intervention: Ms. Arnold, Ms. Bomhardt, Ms. Chaplain, Ms. Etheridge, Ms. Hall, Ms. Kloesel, Ms. Peterson, Ms. Rolater, Mr. Schoffstall, Ms. Stewart, and Ms. Von Tress. Thank you so much for putting up with the intervention and the daily interruptions! It was a wonderful experience and it was made possible because of all of you.

A very special thank you to my pilot-study guinea pigs, Cian, Aoife, and Aisling, for their preliminary participation in my research. Thank you for coming week after week to help me practice all aspects of the study and for becoming my training module stars!

RESEARCH ASSISTANTS

Finally, I would like to thank my research assistants, Mendi and Susie, for being there for me in such a flexible and hard-working capacity throughout the summer school research. These two ladies never missed one day of the intervention and were instrumental in the implementation of the study. They were not only thorough and organized, but provided positive encouragement to the students and teachers with whom they worked. Thank you, Mendi and Susie, for helping me pull off this whole thing!

**Enhancing Young Readers' Oral Reading Fluency and Metacognitive Sophistication: Evaluating the Effectiveness of a Computer Mediated Self-Monitoring Literacy Tool**

Publication No._____

Jennifer Bernadette Wick, Ph.D.
The University of Texas at Austin, 2006

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The purpose of this study was to evaluate the effectiveness of an innovative program that involved the use of a metacognitive self-monitoring checklist and computer video recording device to help fourth graders improve their oral reading fluency. The main hypothesis tested was that students involved in this innovative program would experience increases in oral reading fluency, metacognition, reading comprehension, and motivation for reading relative to students not exposed to the program.

Research on fluency defines the literacy process as automatic word recognition and prosodic, expressive reading (Kuhn & Stahl, 2003). Fluent readers direct attention toward text meaning rather than word decoding and are able to read aloud with speed, accuracy, and proper expression (e.g., Rasinski, 2003). Additional research incorporated into this intervention included teaching students self-monitoring strategies (e.g., Butler,

1998), increasing students' metacognition performance through relevant learning strategy use (Garcia & Pintrich, 1994), and facilitating metacognitive development to increase students' task awareness and self-regulation throughout task performance (Paris & Winograd, 1990).

This intervention study included six dependent variable measures administered to 117 fourth-grade summer school students before and after program implementation, two measures of fluency, two measures of comprehension, and measures of metacognition and motivation. Data analysis used a multivariate analysis of variance (MANOVA) design that consisted of six groups of fourth-grade students representing between subjects effects of checklist (with or without) and reading (video, audio, or neither). The within subjects main effect of time (pre-test and post-test) was tested, as were interactions among the three independent variables.

Results from this research did not support the hypothesis for use of the innovative fluency program for either the self-monitoring checklist or video-recorded innovation. Statistical significance was reported for students' metacognitive reading awareness relative to specific fluency gains achieved by students across the duration of the intervention.

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# Chapter 1

## INTRODUCTION

"Correct articulation is the basis of this art (reading), and we must look well to the foundation before we can safely raise the superstructure; it is, therefore, necessary that, in the order of teaching, it should take precedence…" (Tower, 1871, p. 3)

Oral reading fluency is something that can be easily recognized when it is heard, much like a well executed score of music or a flawlessly performed soliloquy. Fluent delivery of text during oral reading provides written language with its tempo and flow. A fluent reader offers proper elocution and emphasis during oral reading, producing reading that sounds effortless, and prompting the audience to become wholly engaged with the text, involved in the literacy experience.

Fluent oral reading occurs when the text and reading are in alignment, an alignment that can be called comprehension (Tierney & Pearson, 1983). For example, one can envision two individuals reading the same text aloud. One individual reads with difficulty and hesitation, while the other reads clearly with proper intonation and word identification. It can be concluded that the reader who is reading fluently is most likely comprehending the text much better than the reader who is reading haltingly (Stanovich, 1980). Because the ultimate goal in reading is text comprehension, it is important to consider that fluency during oral reading is an indicator and a compulsory component for understanding text. A sometimes difficult task is the identification of exactly what fluency during oral reading encompasses and, furthermore, how to teach young readers to become fluent in their oral reading (Richards, 2000).

Fluency has proven to be a difficult concept for reading researchers to define (Strecker, Roser, & Martinez, 1998). Kuhn and Stahl (2003) referred to fluency as automatic word recognition and prosodic or expressive reading, and Samuels (1979, 1997) identified fluency as accurate word recognition and reading speed. Researchers do agree that fluency is a highly critical yet too often neglected element of reading curricula (Allington, 1983; Anderson, 1981; Kame'enui & Simmons, 2001; National Reading Panel, 2000). Instead of focusing on explicit fluency education, many basal readers and teaching courses promote text comprehension, vocabulary building, and individual word recognition as the necessary building blocks that will eventually lead to fluent reading (Zutell & Rasinski, 1991). This oftentimes results in isolated word instruction instead of reading fluency training (Allington, 1983). This delay in fluent reading may affect comprehension and overall reading achievement. Kuhn and Stahl (2003) reported that children who failed to make the necessary transition from individual word decoding to fluent reading encountered significant difficulties in deriving meaning from text. This is because poor readers often direct a great deal of their cognitive abilities to their decoding efforts and have few cognitive resources left for text comprehension (Therrien, 2004). Although it is important for individuals to develop the skills for decoding words and achieving sight word proficiency with words out of context, it is more important to achieve fluency with these words in the context of connected text. Fluent readers are able to read words quickly and accurately and expend their cognitive energies on understanding what they are reading.

Extensive research over the past 30 years has helped to identify experiences that support independent reading by the end of third grade both in and out of the classroom.

Yet, the National Assessment of Educational Progress found that 44% of a nationally representative sample of fourth graders met the criteria for being disfluent during oral reading (Pinnell et al., 1995). These data suggest that there may still be a need to develop alternate training for young readers in order to encourage them to become more self-reliant and independent in their fluent reading endeavors.

One way to accomplish an increase in overall reading fluency may be through teaching students to self-monitor their oral reading. Research indicates that teaching self-monitoring strategies to students can lead to improved reading in areas of comprehension and summarization (Butler, 1998; Collins, Dickson, Simmons, & Kame'enui, 1996; Jacobson, 1998). This research and other work on metacognition and its impact on reading supports the hypothesis that the metacognitive strategy of self-monitoring may be actively applied to literacy instruction to enhance oral reading fluency.

## The Present Study

The purpose of this research study was to examine the use of a fluency self-monitoring tool during reading that was intended to increase student metacognitive awareness of fluency during oral reading and, ultimately, their reading fluency. I taught the use of this fluency self-monitoring checklist to fourth-grade students involved in a six-week summer school session. Students' daily fluency activities included using this self-monitoring checklist or being assigned to a no-checklist group as they worked through independent-level or instructional-level text each day. One goal of this program was for students to be assisted in listening to *how* they were reading by completion of a self-monitoring checklist. The aim was to strengthen students' fluency during oral reading by encouraging them to attend to what and how they were reading when

completing their daily activity. A final goal of this self-monitoring tool was to lead students actively to self-regulate their own oral reading fluency.

The self-monitoring checklist provided students with specific questions to consider regarding their oral reading fluency. The National Reading Panel (2000) concluded that rereading of text was best facilitated when assisted by a teacher, peer, or parent. In some ways, this self-monitoring checklist was similar to having a peer mediator or teacher present because there was immediate monitoring taking place after the initial text reading. However, the student was independently responsible for his or her regulation, reducing the self-conscious feelings that sometimes accompany reading aloud to others. The goal was that this self-regulation might lead to an increase in self-monitoring and reading self-assessment over time. Another objective of this type of independent self-monitoring was that students would be the only ones who would be viewing and listening to their oral reading. The purpose of this was to reduce the anxiety that some students feel when reading aloud to a teacher or in the presence of their peers (Rasinski, 2003). In addition, it was considered that such a decline in self-consciousness during oral reading might lead to an increase in students' motivation to read.

In addition to the checklist component, this research study also included a video-recorded component to test if video recording could be used to help students receive immediate feedback on their reading of a 2-minute segment of text. The goal in using the video playback was to encourage students to attend more directly to their reading and receive more intensive feedback above and beyond what they might receive through audio-recorded playback or regular rereading. A final goal in utilizing the video component was to enhance students' fluency and prosodic oral reading.

The video component included attaching a digital video camera via a FireWire cable to a Macintosh OS X computer equipped with iMovie (Version 4.0) software (Apple Computer, Inc., 2004), headphones, and an attached microphone. The iMovie software makes it possible to record live action for a period of time and then control immediate playback of both the video and audio segments of what was recorded. Therefore, students involved in the video component of this intervention were able to record a short video clip of their oral reading, and then watch and listen to what they had just read. This immediate playback allowed students to make judgments regarding their reading and reading fluency. Using appropriately difficult reading excerpts, the student read a 2-minute segment of a text aloud while being video recorded. The student then viewed the captured video and answered a questionnaire containing eight fluency self-monitoring or self-regulatory questions. The questions were all related to the oral reading immediately produced by the student and included the elements of rate of reading, fluency of reading, prosody, intonation, and volume during the oral reading segment. In this way, the student was required to evaluate the fluency of the oral reading that was produced and to provide individual self-feedback on personal successes and areas of improvement to consider for the next oral reading segment.

Following the video viewing and self-monitoring checklist, the student engaged in a second, 2-minute rereading of the same material. It was expected that the student would make improvements based on what was viewed on the video clip and what was decided through the completed self-monitoring checklist, leading to an increase in the student's oral reading fluency.

The overarching goals of this program were to have students develop the metacognitive skill of self-monitoring during an oral reading activity and to increase oral reading fluency. The expectation was that there would be an increase in the metacognitive skills associated with self-monitoring during an oral reading exercise. Students who were assigned to the innovative program were required to revisit the video immediately after it was created and monitor their intonation and prosody, rate of reading, reading accuracy, and voice characterization. As self-monitoring is a component of metacognition, the student was also required to attend to *what* was read and *how* it was read. It was expected that viewing the video would help students actively regulate cognition in subsequent oral reading. Additional program objectives included increased achievement in the area of reading comprehension and an increase in reading engagement within the multidimensional framework of motivation for reading.

Because an increase in oral reading fluency was a desired outcome for students instructed with this self-monitoring tool, it is important to note that Stahl and Stahl (2004) reported that for students to develop automatic word recognition for fluency, the text must be complicated enough that readers have to analyze words in orthographic ways and make semantic connections. Therefore, an attempt was made to ensure that the texts were appropriately difficult and individualized for student use. This was done to ensure that the text followed the "Goldilocks Principle" of text selection (Stahl & Kuhn, 2002), neither so difficult that the student would become frustrated during reading, nor so simple that the student would become bored with the compulsory fluency activity.

Reading comprehension is another outcome that was tested. It had been expected that students receiving fluency instruction in the video self-monitoring condition would

show an overall increase in reading comprehension. Fluency and comprehension have been shown to be explicitly related (Dowhower, 1987; Rasinski, 2003). By increasing their oral reading fluency, students were also expected to develop their abilities to comprehend what they read, leading them to a better understanding of text and greater reading comprehension achievement. In order to increase comprehension during reading, students must be able to spend their energy listening to what they read instead of struggling through the text. As fluency would increase and students became able to make their way more easily through the text, the expectation was that they would be able to devote more cognitive resources to comprehension and less to fluency and reading rate (LaBerge & Samuels, 1974).

In what follows, I review in five sections the literature relevant to the rationale for the components included in this intervention study. First, I explore what is known about metacognition as it relates to reading, the development and purpose of the metacognitive strategy of self-regulation, and how self-regulation can be used within the context of oral reading. In the second section, I describe the literature highlighting the relationship between fluency and reading, attempting to draw a connection between fluency and self-monitoring to support the hypothesis that a reader with strong self-regulation strategies will have higher oral reading fluency than a reader who is low in self-regulation during oral reading. I also review the literature on the link between fluency and comprehension, highlighting how strong, fluent readers maintain higher, enhanced levels of comprehension than do their lower-achieving peers. In the third section, I examine the relationship between an improvement in reading achievement and an increase in students' motivation to read, and, in a fourth section, I look into current technologies that are

available for fluency development and examine how immediate video replay has been used for reflection in classroom settings. Finally, I present an overview of concerns that arose as a result of implementing this research intervention in a summer school program.

## Metacognition and Self-Regulation in Reading

Reading has been defined as an active process in which readers interact with text in a purposeful manner to create meaning and experience understanding of print (Anderson, Hiebert, Scott, & Wilkinson, 1985; Valencia & Pearson, 1987). A purposeful reader sets a preliminary goal for the reading of a text, either for information, elaboration, or enjoyment. Active readers think while they are reading, and use phonemic processing, vocabulary knowledge, and reading strategies to get the most out of the text (Mokhtari & Reichard, 2002). It is said that effective readers use metacognitive strategies by attending to the text as they read, and self-monitoring or self-regulating their understanding as they progress through the text (Schraw, 2001). By being aware of how and what they are reading, students develop appropriate metacognitive skills and take responsibility for their cognitive interaction with the text. Students who are not able to actively engage in cognitive strategies necessary during reading may have difficulties controlling and monitoring their cognitive processes (Pressley, 1990). Application of cognitive strategies is not immediately automatic. Students need instruction regarding strategy development in order to understand *when* and *how* to use the proper strategies (Paris, Lipson, & Wixson, 1983). In addition, students who do not receive appropriate scaffolding for the development of learning strategies will be unable to self-monitor in context and will not be conscious of or have control over their metacognitive strategies (Pressley, Borkowski, & Schneider, 1987).

These descriptions of reading all connect to the construct of metacognition, a construct that has received a tremendous amount of attention since its introduction to the field of cognitive and educational psychology in the 1970's. For the purpose of this research study, I defined metacognition as a thinking process that involves students' individual perception and understanding of the strategies they have to encourage self-regulation and self-evaluation. Additional descriptors of metacognition and research designed to enhance metacognition and self-regulation during reading will be examined in Chapter Two.

*Self Monitoring as a Metacognitive Strategy*

Self-monitoring is a component of metacognition and includes monitoring solution attempts and solution strategies, as well as evaluating progress during task-related activities (Dominowski, 1998; Jacobson, 1998). When a person is self-monitoring, the person is continuously redirecting learning to facilitate the attainment of goals and knowledge acquisition. It is essential to self-monitoring that the individual is aware of what is occurring during the learning process (Mayer, 1998). Many students do not develop self-monitoring strategies due to lack of scaffolded strategy instruction and inadequate application of strategies in context (Mokhtari & Reichard, 2002).

When a student is required to self-monitor during reading, that student is asked to attend to whether or not understanding is occurring. That is, the student uses an organized sense of what is taking place within the text to decide what actions may be needed next in order to make meaning from the text (Jacobs & Paris, 1987). Students who have a strong ability to self-monitor are able to overcome problems during reading by anticipating problems within the text, acknowledging problems when they arise, and correctly

invoking some problem-solving strategy to continue through the text by knowing where and when to apply these strategies (Paris, Lipson, & Wixson, 1983). If a student is not able to self-monitor during reading, the likelihood will be low that he or she will clearly understand what is occurring in the text.

Although many readers, and especially proficient learners of reading, develop the ability to self-monitor their reading on their own over time, explicit instruction in self-regulation and self-monitoring is often beneficial, particularly for those readers who have not yet developed these metacognitive abilities. Explicit strategy instruction may facilitate students' task completion by helping them understand what strategy is needed and how that strategy should be implemented during reading (Brown, Armbruster, & Baker, 1986).

Through careful consideration of the literature available and the empirical evidence cited regarding the development and use of self-regulation, it can be determined that as students are trained to self-monitor their own oral reading and become more deeply involved in the recursive process of self-monitoring, they can increase their metacognitive development and their overall reading performance .

*Comprehension and Self-Monitoring*

Students who self-monitor during oral reading ask questions regarding the text. Questions such as "Is the text making sense?" "What is happening currently in the text?" and "What will occur later on within this text?" help students to focus in on the meaning of the text while they read. Skilled readers continuously self-monitor as they engage in reading, asking questions, checking for understanding, and rereading when comprehension breaks down (Worthy, Ivey, & Broaddus, 2001). Self-monitoring is

directly related to an increase in reading comprehension when students are given a purpose for reading and are required to self-monitor during reading (Chan, 1991; Jacobs & Paris, 1987; Malone & Mastropieri, 1992; McLain, Gridley, & McIntosh, 1991).

In addition to needing a purpose for reading, a classic paper by researchers Paris, Lipson, and Wixson (1983) emphasized the necessary component of intentionality when applying strategies in learning situations, indicating that students who lack understanding of *when* and *how* to apply reading strategies will not benefit from strategy training. Paris and Winograd (1990) also emphasized that self-monitoring strategy instruction is not a final learning objective for students. Students need constant support and reinforcement when applying self-regulation learning strategies; otherwise, reading comprehension will not be enhanced once the scaffolding and support of the teacher has been removed. Literature reviewed in Chapter Two examines the development of self monitoring strategies for reading comprehension and investigates the application and difficulties of teaching and developing metacognitive strategies in other literacy areas.

## Fluency in Reading

Fluency is the ability to read with speed, accuracy, and proper expression during oral reading. It is defined by Kuhn and Stahl (2000) as both automatic word recognition and prosodic or expressive reading. The National Reading Panel (2000) described fluency as a necessary component of skilled reading and one of several critical factors required for text comprehension. A strong reader is able to self-monitor during oral reading and can recognize a breakdown in reading fluency in order to correct the problem and continue reading fluently. A skilled reader can also monitor and adjust reading rates and reread if a breakdown in fluency occurs during oral reading (Cunningham & Stanovich,

1998). A student who does not self-monitor during reading may experience breakdowns in fluency and comprehension and not be able to redirect or reread that text which has been misunderstood (Wagner & Sternberg, 1987). Empirical evidence of fluency development and the use of prosodic features during oral reading will be examined more thoroughly in Chapter Two.

*Fluency and Self-Monitoring*

In the early elementary grades, teachers often help young readers develop their metacognitive strategies by monitoring their students' fluency, accuracy, and comprehension for them. Teachers ask questions such as "What do you think this story will be about?" and "How did the characters resolve the conflict with this story?" As students progress through elementary school, they are required to self-monitor using the same strategies that their teachers prompted in previous grade levels, but there is a disconnect between what is expected and what is taught. Palincsar (1986) suggested that students need to be taught how to assume the role of regulator within the realm of reading and learning. Worthy, Ivey, and Broaddus (2001) also emphasized that "although the metacognitive aspects of fluency instruction should be part of instruction at any level, it seems particularly important for readers beyond the beginning stages to understand the purpose of fluency instruction" (p. 126).

There is a lack of research in the realm of fluency and its relationship to metacognition and reading. I predicted that an increase in oral reading fluency and overall reading achievement would occur if students were better able to self-monitor their own oral reading fluency. If an increase in students' abilities to apply the metacognitive strategy of self-monitoring to their oral reading fluency leads to enhanced achievement in

their abilities to read fluently, students may ultimately spend less time decoding each individual word or phrase within a text and have the benefit of more time to focus on text comprehension and story development (Baker & Brown, 1984).

*Fluency and Comprehension*

There is strong empirical evidence to support the relationship between the fluent reading of text and reading comprehension (Carlisle & Rice, 2002; Fuchs, Fuchs, & Maxwell, 1988; Shinn, Good, Knutson, Tilly, & Collins, 1992). Explanations for this relationship may come from information processing theory (LaBerge & Samuels, 1974), which describes the need for use of cognitive resources when attending to printed words (word reading) and constructing meaning (comprehension). Students who are able to read more fluently tend to focus on reading as a process for meaning derivation rather than individual word decoding (Baker & Brown, 1984).

Prosodic reading fluency refers to students' ability to read with expression and proper vocal intonation. For example, if one were to read the exclamation, "You did it!" and place emphasis on the word "you" during oral reading — "**You** did it!" — it might appear that someone is being blamed for something in particular or being singled out of a crowd, which would elicit certain emotions in characters. Whereas if the word emphasized is "did" — "You **did** it!" — it might appear that someone has accomplished something for the very first time, and a completely different reaction might be warranted depending on the connotation of the text's meaning. Reading with fluency and prosody can indicate that a reader understands what is being read (Kuhn & Stahl, 2000).

However, Allington (1983) cautioned that children who rely heavily on prosodic features when understanding oral language may be at a disadvantage because there are no

prosodic markings in written text. Without adequate skill development in reading fluently, comprehension difficulties may result as students move beyond word recognition to fluent oral reading because without proper intonation, the text may not make sense.

Reading fluency is not the only element necessary for text comprehension, but it is a significant one. Lyon (1998) stated,

> Children must also acquire fluency and automaticity in decoding and word recognition. Consider that a reader has only so much attention and memory capacity. If beginning readers read the words in a laborious, inefficient manner, they cannot remember what they read, much less relate the ideas to their background knowledge. Thus, the ultimate goal of reading instruction–for children to understand and enjoy what they read–will not be achieved.

Fluency instruction should be addressed so that students are afforded all opportunities to increase their reading and text comprehension achievement (Fuchs, Fuchs, Hosp, & Jenkins, 2001; Rasinski, 2003; Richards, 2000; Samuels, 1979, 1997).

## Motivation and Reading

It may be argued that if students are able to achieve a level of fluency in their own reading and are better able to comprehend text, they are accomplishing their individual goals for reading. However, many students may not set goals for reading or be able to recognize when the goals they have set have been achieved (Turner & Paris, 1995). In addition, students at all levels may engage in reading at different times for different reasons. Research conducted within the last 10 years has looked directly at both cognitive and motivational reasons that children read and has offered insights into the multidimensional framework that leads to motivation to read or avoidance of a reading task (e.g., Miller & Meece, 1999; Ryan & Deci, 2000).

Many researchers have worked diligently to describe the motivation principles behind what makes individuals strive to reach goals and be successful in many aspects of activity and life. Maslow (1954) posited that individuals need to have their most basic needs met (e.g., physiological needs, belongingness) before they are able to strive for esteem needs and cognitive exploration. Ryan and Deci (2000) included both extrinsic and intrinsic orientations of motivation that may be present when someone is *motivated* or *moved* to engage in an activity.

*Motivation and Reading Achievement*

In the area of reading motivation research, Wigfield and Guthrie (1997) concluded that reading motivation is a dynamic construct that should be examined using elements of intrinsic and extrinsic incentives, individually perceived competence for reading, and self-efficacy beliefs in one's ability to read text.

Motivation has been cited as a determining factor of student success in reading and writing (Calfee & Nelson-Barber, 1991). Two affective and motivational factors that can influence reading engagement are individual interest in reading and attitudes toward reading. Schiefele (1991) divided reading interest into two parts: individual interests, which are more stable feelings about the activity of reading; and text-based interests, defined as interests generated by a text written in a particularly appealing way.

Turner (1995) concluded that students' engagement was enhanced when complicated activities required that they use various cognitive and metacognitive strategies to maintain their attention and engagement. Research conducted by Miller and Meece (1999) supported this finding and suggested that students' motivation to engage in

specific reading activities was directly influenced by how challenging the task was for them to complete.

However, Schunk (1998) concluded that students' motivation for a task increases when they are making progress in learning. It could be concluded that, much like with text selection processes in fluency development, task selection processes are important influences on students' motivation to read.

## Technology Support of Reading Instruction

Teachers are instrumental in the process of continual monitoring of students' fluency during oral reading and are critical in assessing student understanding and comprehension of what has been read. Likewise, research findings have led to the conclusion that students can aid in the oral reading fluency and comprehension development of peers by helping and leading one another through the process of oral reading monitoring (Palincsar & Brown, 1984). However, students eventually need to learn how to self-monitor during oral reading, and there is a void in the research regarding the impact of self-monitoring of fluency during oral reading. It would seem important for students to learn the strategies and hone the skills required to regulate their own oral reading fluency.

In addition, fluency regulation is altogether a difficult task because students must listen to *how* they are reading without forgetting to attend to *what* they are reading. Disfluent readers may spend precious time decoding single words, which leads them to confuse passage meaning and to cloud text comprehension, and even to lose track of where they were in the passage being read (Baker & Brown, 1984).

Emerging from this need for research connecting self-monitoring and oral reading fluency, several computer and software programs are currently available that are meant to encourage oral reading fluency and word recognition automaticity. Watch Me!-Read is a software program developed by IBM and distributed by the Houston Area Urban League, Inc., and by the School District of Philadelphia (1995). The Fluency Coach is a similar software series available through the Pearson Scott Foresman publishing company (2004). These software packages use speech recognition to identify and correct problems in pronunciation during oral reading and provide students with immediate feedback as they read orally. In addition, teachers can obtain individual student reports in order to monitor student progress. Students are able to hear how they have read the passages and are prompted to reread words that have been mispronounced and, in some cases, also receive word meanings and word pronunciations upon request.

Although both of these programs seem to be promising, interactive ways for students to participate in oral reading, they lack several components that I believe are imperative to the success of young readers. First, the texts that are used in The Fluency Coach are predetermined by the publishers and do not make allowances for student reading ability or interest. Watch Me!-Read also comes with designated text packages, but for an additional fee, the teacher can purchase a scanner in order to scan in additional pages of texts. These existing software packages are expensive and must be purchased as often as the software and texts are updated.

The innovative program that I proposed incorporated using classroom computers and reading resources available in school classrooms and libraries. Although some schools may have the resources to purchase existing commercial software programs, text

selections are not individualized to students' needs, reading level, and interests, which research has shown can lead to an increase in students' satisfaction with reading (Nathan & Stanovich, 1991). In addition, there is no self-monitoring strategy development incorporated into these software packages and no application of learning strategies. Even though these programs may enhance student word recognition and word reading automaticity, students are not encouraged to attend to their prosodic reading or self-regulate their oral reading fluency. While there are benefits to using these software packages, using them explicitly for fluency development seems to enhance the disconnect mentioned previously between what is expected of students in the context of oral reading fluency and what is taught to students as they attempt to assume their regulatory roles in oral reading fluency development.

## Additional Considerations

The study described here incorporated the use of the video-mediated self-monitoring oral reading fluency research study as it has been described throughout this chapter. While implications and hypotheses were considered relative to student achievement and program outcomes, other factors were not considered during the study development. Specifically, the research study was ultimately conducted in a six-week summer school session that incorporated 117 fourth-grade students from fourteen separate elementary schools in a Texas school district as they transitioned into fifth grade. In addition, six reading and language arts teachers from around the same district were included in this study.

Although the study was completed as designed in many ways, outcomes based on summer school impacts and teacher effects had not been anticipated in the initial design.

Research regarding students' motivations and reactions to involvement in summer school has included teacher and student relationships, so both impacts that were not primarily considered in this research design are, in some manner, related to one another (Heron, 2003). Both considerations are addressed in this section and will receive greater focus in Chapter Two.

*Teacher Impacts*

One consideration that influenced the implementation of this innovative reading intervention included teacher effects on student groups involved in each aspect of the research study. The six groups of students involved in different combinations of variables to test the intervention were intact groups of students, each with a different reading and language arts teacher who brought different levels of experience and interest to the summer school session. Research shows that teacher preparation and pedagogical content knowledge are important factors in student success. Through a recent analysis and validation of the relationship between teacher evaluations and student outcomes, Gallagher (2004) found a strong, positive correlation between high-quality teaching and high student achievement in reading. Further conclusions have been drawn to encourage attention to substantial teacher effects on elementary school students' academic growth in reading and mathematics (Rowan, Correnti, & Miller, 2002).

Because this research intervention occurred in a summer school, teachers were given a relative degree of latitude in their lesson planning and were not as accountable for student outcomes as during the regular school year. This information, coupled with the fact that teachers and students were not familiar with one another prior to the summer school session, did not encourage the type of teacher and student interaction and

relationship that would have benefited the study. Recall that in order to motivate students to read, it had been planned that teachers and students would work together to choose appropriate texts, both in the level of difficulty and based on students' interests and abilities. In fact, only three of the six reading and language arts teachers involved in the study were fourth-grade teachers during the regular school year. Additionally, these teachers were not placed with any of their own fourth graders during the summer school session.

Reading and language arts teachers involved in this intervention implementation were responsible for instructing their students in all literacy processes. In addition, there was no collaboration between the teachers and me, as had been my hope through initial program construction. Prior to the start of summer school, teachers were informed about the research intervention and were briefed on the oral reading fluency instruction that would occur in their classrooms throughout the implementation of this research study. Further teacher impacts are noted in subsequent chapters, and research concerning student learning and how it is highly and directly influenced by their teachers' abilities to manage literacy instruction will be addressed (Sweet, 1997).

*Summer School Impacts*

A second concern that influenced this reading intervention included enrollment in summer school and its possible effects on students involved in the research study. Research has shown that in order for students to achieve gains in summer school classes, effective summer programs must involve parents, contain specific and substantial academic components for the teaching of reading and math, coordinate experiences of summer school with that of the regular school year, and scrutinize fidelity of treatment

across the grade levels (Borman, 2000). Additional summer school considerations include high-quality educators and materials needed in order for students to develop the necessary skills and reach the levels of achievement necessary for progression to the next grade level (Heron, 2003).

There were many positive aspects to the summer school program in which these fourth-grade students were engaged. Small class sizes, structured summer school days, and high teacher attendance rates supported summer school learning. However, the deficiency in coordination between the regular school year and summer school experiences, lack of parental involvement, and disconnected lessons in reading instruction between classes impacted students' achievement levels, motivation to learn, and overall interest in the intervention (Cooper, Charlton, Valentine, & Muhlenbruck, 2000).

## Summary and Rationale for the Study

Research over the past decade has provided theoretical as well as empirical evidence for the role of metacognitive strategy training in relation to reading development. Reading researchers have studied the role of fluency in reading comprehension and overall reading achievement. Consideration for this research intervention involved a synthesis of completed research on metacognitive self-monitoring strategy training, comprehension strategy development, and the relationship between fluency and comprehension. It was predicted that training students to become more metacognitively aware through the use of a self-monitoring checklist might provide the tools necessary to produce an increase in oral reading fluency development. In addition, it was expected that an increase in oral reading fluency would lead to greater success in

reading comprehension abilities and overall development in reading achievement. I further postulated that an increase in oral reading fluency and metacognitive awareness during reading would lead to an increase in students' motivation to read.

Through assimilation of the research and confidence that technology is fast becoming a medium for instruction in reading and learning (e.g., Johnston, 2006), I proposed this research study to improve fourth-grade students' ability to evaluate their oral reading fluency through the use of a metacognitive self-monitoring checklist and computer video recording device. My main hypothesis was that students involved in this innovative program would experience increases in oral reading fluency, metacognition, reading comprehension, and motivation for reading relative to students not exposed to the program. Additional hypotheses included (a) increases for all students in the intervention on measures of oral reading fluency, reading comprehension, metacognitive awareness during reading, and motivation for reading across time; (b) increases in metacognitive awareness during reading for students using the self-monitoring checklist; and (c) increases in motivation to read for all students involved in the research intervention.

# Chapter 2

## LITERATURE REVIEW

The rationale for this research study developed from four general areas of research, including: (a) metacognition and self-regulation, with specific application to reading strategies and reading achievement; (b) oral reading fluency development and fluency activities as they relate to self-monitoring and reading comprehension; (c) motivation theory, and in particular, motivation constructs for reading and reading engagement; and (d) technology and its use in supporting reading achievement, primarily fluency development and oral reading fluency acquisition. Additional literature included here involves considerations for the research study under the circumstances in which it was conducted, namely (e) teacher impacts on students' learning and (f) the impact of summer school on students' achievements, academic abilities, and overall motivation to succeed.

### Metacognition and Self-Regulation in Reading

This section reviews the literature related to metacognition and self-regulation as a metacognitive process in reading. A considerable body of research has been developed that investigates the teaching of learning strategies to students as they learn to read and comprehend text. The notion that metacognitive strategy instruction, and in particular self-regulatory strategy instruction, can aid in reading monitoring and comprehension building has been supported through various empirical studies. However, research shows that teaching readers to be more aware of their cognitive abilities and control their metacognitive strategy use requires careful practice and effective scaffolding (e.g., Pressley, Borkowski, & Schneider, 1987).

*Defining Metacognition*

Metacognition refers to the act of thinking about thinking (Flavell, 1976) and has been defined as the understanding of one's own knowledge (Brown, 1987). Alexander, Schallert, and Hare (1991) explicitly defined metacognitive knowledge as knowledge about one's own cognition, the regulation of that cognition, and metacognitive strategy knowledge, or the knowledge of strategies that aid in task completion and goal achievement. A learner with strong metacognitive skills is aware of the thoughts, strategies, and processes being implemented in order to shift from a mere memorization approach to one of constructing meaning (Paris, Lipson, & Wixson, 1983).

In their examination of relevant definitions of metacognition, Paris and Winograd (1990) characterized metacognitive awareness as both having knowledge about cognitive states and processes and maintaining executive control of metacognition. Research outlining the development of students' ability to self-appraise and self- manage their cognitive aspects of problem-solving concluded an increase in metacognitive self-monitoring consistent with age and ability. It is clear that as students increase in age and ability, their metacognitive sophistication increases, and they are better able to apply learned cognitive strategies and more able to self-regulate their task completion and comprehension of a concept (Mokhtari & Reichard, 2002).

Researchers have generally claimed that, within the act of cognition (i.e., the process of knowing that includes both awareness and judgment), the learner is able to interpret what is known through the more highly organized and comprehensive element of metacognition (Pressley, Borkowski, & Schneider, 1987). Borkowski, Carr, and Pressley (1987) theorized that students who are able to use their metacognitive skills are

successful in using learning strategies to achieve in academic tasks. Zimmerman (1989) agreed that students who are able to integrate learning strategies into their daily activities of learning and playing have a stronger chance of increasing their academic achievement and lifelong learning potential.

*Metacognition applied to learning.* Paris and Winograd (1990) encouraged cognitive coaching, whereby students are taught how to recognize and implement effective metacognitive strategies. Instructing readers within a cognitive coaching framework may be an effective approach to training students to be more metacognitively aware and use relevant learning strategies. This approach maintains that students and teachers share common goals, that ongoing assessments lead to redirecting learning, and that mutual regulation of learning occurs between teachers and students. Within the framework of metacognitive strategy training and development, the overarching goal is transfer of responsibility to the student as a self-regulated learner. According to Zimmerman (1989), this transfer can only occur if the student is able to self-regulate or monitor learning strategies, has high self-efficacy related to performance skills, and is committed to the academic goals.

*Self Monitoring as a Metacognitive Strategy*

Metacognition focuses on self-regulated thinking processes (Jacobs & Paris, 1987). There is evidence that students who experience metacognitive awareness through self-regulated learning are better able to transfer knowledge from one situation to another, both in and out of the classroom (Nietfeld & Schraw, 2002). Butler (1998) investigated the use and implementation of a self-regulated approach to learning in her work with a program she called Strategic Content Learning (SCL). The participants were

post-secondary students with learning disabilities engaged in the program to improve their metacognitive strategy approaches to tasks, including self-regulation. Butler found that students who were able to self-regulate also managed their learning activities more actively as they engaged in a task, and adjusted their approaches to tasks as needed. Not only were these students able to self-monitor their learning, they took ownership of their learning outcomes and increased their understanding of task demands and their overall task performance.

Explicit instruction in self-regulation and self-monitoring can often benefit readers who have not yet developed the necessary metacognitive abilities. Instruction that helps students learn to set goals for self-monitoring during oral reading may aid them in task completion. This notion has been empirically supported, as shown by Nietfeld and Schraw (2002). The studies conducted were based on the hypothesis that strategy training improves monitoring accuracy because it enables individuals to understand their own problem-solving approaches (Gigerenzer, Hoffrage, & Kleinbolting, 1991). Although the strategy training might have had a greater effect if it had been extended for a longer period of time, Nietfeld and Schraw (2002) concluded that there is a strong connection between strategy instruction and self-monitoring.

Garcia and Pintrich (1994) concluded that as students began to make use of relevant learning strategies, including self-monitoring, there was an increase in their metacognition and overall academic performance. Classroom activities that facilitate the individual learning processes involved in the development of metacognition can provide students with the tools necessary to increase their awareness of a task and to self-regulate throughout their performance of that task (Paris & Winograd, 1990).

However, Mayer (1998) concluded that mastering each component of strategy training is not adequate when problem-solving and self-monitoring. Instead, he asserted that students require the development of the learning strategies in conjunction with the control and understanding of what to do to regulate learning and when to apply those necessary strategies.

*Self Monitoring and Self-Efficacy*

Self-efficacy refers to a person's perceptions about his or her abilities to complete a specific task, including academic tasks (Bandura, 1986). Zimmerman (1989) concluded that individuals can use relevant learning strategies when supported by and monitored by others, but for individuals to be self-regulated learners, they must be influenced by their own self-efficacy for the task.

In addition, Zimmerman (1989) maintained that a student's self-efficacy perceptions were dependent on the student's knowledge in relation to a task, the student's learned and understood metacognitive processes needed to complete the task, goals for task completion, and affect with regard to the task. Therefore, in order for a student to self-monitor during an academic assignment, the student must set plans and monitor his or her cognitive resources as they are applied to the assignment in addition to having self-efficacy beliefs about their ability to complete the assigned task (Wigfield, 1997)

*Comprehension and Self-Monitoring*

Researchers have been enthusiastic about investigating the application of students' metacognitive awareness and self-regulation during reading comprehension. The use of self-monitoring approaches during reading comprehension has been investigated through students' reflections about their thinking while reading in order to

understand how they are approaching the task and what solutions they are devising to complete the task (Baumann, Jones, & Seifert-Kessell, 1993). Researchers have considered that skilled readers approach reading with plans for reading and for self-monitoring during reading in order to solve comprehension problems as they arise, while readers who are still developing do little monitoring while reading and concentrate more on decoding and individual word recognition than on comprehension of text and self-monitoring strategy application (Snow, Burns, & Griffin, 1998). Pressley and Afflerbach (1995) referred to the former readers as individuals who approach reading strategically and who are "constructively responsive" when orchestrating their cognitive resources and self-regulating their text comprehension.

A synthesis of five studies that investigated the significance of implementing a metacognitive approach to reading comprehension relating self-regulation to reading comprehension concluded statistically significant effects (Collins, Dickson, Simmons, & Kame'enui, 1996). Metacognitive activities included in these studies were planning before reading, self-monitoring understanding during reading, and checking outcomes after reading. The authors also highlighted the metacognitive components of awareness of oneself, the knowledge of task demands, and an understanding of the relationships between text, prior knowledge, reading strategies, and reading comprehension.

Within the field of special education, a growing body of literature has shown that students with learning disabilities greatly benefit from self-monitoring strategy instruction (Reid, 1996; Sawyer, Graham, & Harris, 1992). Jitendra, Hoppes, and Xin (2000) provided explicit instruction in identifying main ideas using self-monitoring to

students in a special education setting. Their results indicated that main idea comprehension increased in the groups that had self-regulation as a condition.

Chan (1991) provided a five-stage instructional procedure to increase the generalization of self-monitoring during text comprehension. Within the five stages of cognitive modeling, overt external guidance, overt self-guidance, faded self-guidance, and covert self-guidance, students were taught how to plan and monitor during reading to strengthen their text comprehension and metacognitive strategies. These stages resulted in an increase in students' ability to transfer self-monitoring strategies from one text to the other.

When metacognitive processes are applied during reading, the reader receives support in attending to what is being read, how it is read, and what is being constructed from the text. Jacobs and Paris (1987) supported the use of metacognitive strategies during reading through a study investigating a program entitled "Informed Strategies for Learning" (ISL). Within this program, third- and fifth-grade students were taught about metacognitive strategies, i.e., what they are, how to make use of them, when to utilize them, and why they are effective tools for reading. Reading comprehension scores indicated that students within the ISL classes were able to develop their metacognitive strategies over time. These results indicate that self-regulation training might aid in reading comprehension and main idea identification for some students. However, training students to self-regulate for reading comprehension may not be the panacea that addresses reading difficulties for those students who struggle with additional aspects of reading.

A need exists to investigate the role of self-regulation within other aspects of reading and reading achievement. Fluency is an area of reading that is vital to reading development and success (Mastropieri, Leinart, & Scruggs, 1999; Richards, 2000). Yet, research on the benefits of self-regulation of oral reading fluency is sparse. There is a need for systematic investigation of the effects of self monitoring strategy training on the development and maintenance of fluency with young readers.

## Fluency in Reading

Researchers have worked to find ways to develop and enhance students' reading fluency both in oral reading and silent reading endeavors. Literature focused on fluency development has skyrocketed over the last five years after the publication of the National Reading Panel (2000) report, which included fluency as a major component in reading and a significant factor in reading comprehension. The literature reviewed in this section is focused on fluency in reading and the application of fluency techniques during reading. In addition, the literature presented here investigated the relationship between fluent reading and reading comprehension. Finally, self-monitoring of reading fluency is also examined.

### *Fluency Development*

Reading researchers agree that fluency is a very complicated element within overall reading achievement. While it is an important component, it is often overlooked, perhaps because effective interventions for fluency are still not widely known (Chard, Vaughn, & Tyler, 2002). In addition, problems with fluency are less commonly recognized or targeted for instruction than are problems with isolated word-reading accuracy (Carlisle & Rice, 2002; Nathan & Stanovich, 1991). This approach is

counterintuitive, as indicated by Stahl and Stahl (2004), who reported that one important factor in fluency development is that children need to read connected text rather than focus on isolated word reading. Indeed, fluency has been described as the bridge between text decoding and reading comprehension (Carnine, Silbert, Kame'emui, & Tarver, 2003; Pikulski & Chard, 2005).

*Modeling fluent reading*. Several researchers have suggested the benefit of using effective fluent reading models (Bear & Cathey, 1989; Blau, 2001; Hoffman, 1987). If students are provided opportunities to listen to strong examples of fluent oral reading, that is, oral reading that is prosodic, accurate, and at a proper rate of speed, they will be better able to hear how the voice of the reader brings sense to the text while also bringing the characters in the text to life (Martinez, Roser, & Strecker, 1998). In addition, listening to examples of fluent oral reading can lead to an increase in comprehension and higher levels of vocabulary attainment in the elementary classroom (Cohen, 1968).

*Fluent reading performances*. Readers' Theatre has been suggested as another way to aid in the development of oral reading fluency. In a Readers' Theatre performance, students are provided an opportunity to prepare scripts from a text, organize groups to perform the text, and then present the text to their class in a dramatic and entertaining way (Worthy & Prater, 2002). Using a ten-week Readers' Theatre implementation project in two second-grade classrooms, Martinez, Roser, and Strecker (1998) reported notable gains in overall reading rate – an average increase of 17 words per minute – and an increase in reading expressiveness.

Radio Reading (Opitz & Rasinski, 1998; Rasinski, 2003) is another way that students can enhance their oral reading fluency. In Radio Reading, students are assigned

texts that they will be reading in class and are given opportunities to practice reading the text silently to themselves and then aloud with a partner or in a small group. Rasinski (2003) suggested using Radio Reading as an alternative to round robin reading practices so that students are able to read the text several times and develop a level of fluency before they are asked to perform the text to the class.

*Repeated reading strategies*. These fluency practices, Readers' Theatre, Radio Reading, and effective fluent reading models, bring to the forefront another researched and debated fluency intervention: rereading. When students are reading a text in an attempt to emulate a previously modeled passage and when students are rehearsing for their performance in the Readers' Theatre or Radio Reading, they are engaging in the rereading of text.

As early as 1976, Brown was providing evidence to support the notion that rereading of text leads to an increase in reading rate and word accuracy. Samuels introduced repeated reading in 1979 as a theoretical rationale for increasing oral reading fluency. Subsequently, rereading has been implemented as a key feature in teaching and developing oral reading fluency, and research has consistently shown the value of this approach (Dowhower, 1987, 1989; Herman, 1985; Rasinski, 1990; Taylor, Wade, & Yekovich, 1985).

Evidence of the benefits of guided repeated oral reading has also been reported. Kuhn and Stahl (2000, 2003) concluded that if the student was unassisted throughout the rereading process, the gains were significantly lower than when an instructor was present and feedback was given. These studies, cited by the National Reading Panel (2000),

indicate that instruction and guidance during rereading is important to significant and positive improvement in overall word reading achievement and fluency development.

*Attention to prosody*. Schreiber (1980) observed that repeated reading aided in the development of proper phrasing and prosodic cueing during oral reading, another key element of fluency.

Prosody is a specific aspect of fluency that involves students' ability to read with expression and proper vocal intonation. Prosodic reading provides evidence that the reader is making meaning from the text (Kuhn & Stahl, 2000). By reading text in a specific way, the reader is actually aiding in the development of text meaning.

Although development of automatic word recognition is the primary step in becoming a fluent reader, the element of prosody should not be overlooked, as it is another important aspect that helps readers to personalize how text is read. Prosody comes from the Greek word *prosoidia*, meaning a song sung to music, and has been defined as the ability to read aloud, projecting the natural intonation and phrasing of the spoken word on the written word (Richards, 2000). Therefore, when a student is reading a text aloud with prosody, the story sounds like a "song sung to music," with the text being conveyed as easily and naturally as oral language, rather than haltingly or laboriously.

For putting prosody theory into practice in the classroom, Opitz and Rasinski (1998) encouraged prosodic reading by advocating that readers get into character when reading aloud, assigning feelings and the character's disposition to the text instead of simply reading the text. In addition, a student's reading prosody can be measured through observation, in which the evaluator listens for specific vocal emphasis, text phrasing, and

attention to author's syntax as reflected in the student's oral reading (Hudson, Lane, & Pullen, 2005).

*Further fluency practices*. Several instructional fluency practices used in classrooms today do not promote high levels of oral reading fluency. Round robin reading practice includes a teacher calling on one student at a time to read from the basal or selected text while other students in the class are instructed to follow along. This oral reading fluency technique can be a daunting task for any reader, especially with unrehearsed text, and is not a strong practice for improving reading comprehension (Hoffman, 1987).

Sustained Silent Reading (SSR) is another form of a fluency instructional technique that has not been shown to be a supportive practice for development of oral reading fluency (Rasinski, 2003). Although fluent silent reading while comprehending is the goal of reading, oral reading fluency development is not served best by silent reading in the early years (Speece & Ritchey, 2005). However, silent reading should not be discounted as a beneficial practice for overall reading development (National Reading Panel, 2000) and should be implemented more often in later grades, where support for fluency as a predictor of reading comprehension ability begins to diminish (Yovanoff, Duesbery, Alonzo, & Tindal, 2005).

*Fluency and Comprehension*

Empirical evidence has demonstrated that providing fluency training during the reading acquisition phase leads to an improvement in overall reading ability (Allington, 1983). Text comprehension demands understanding of words in context, far beyond

individual word or phrase reading. By focusing on connected text reading, students will be encouraged to move from individual word decoding to more fluid text reading.

Cognitive capacity is limited during reading, and when fluency is the focus of the reading activity, there is little or no emphasis placed on text comprehension (Samuels, 1979, 1997). Before readers are able to process text at a higher level of understanding, they must automatically recognize the words that they are reading (Rasinski, 2003). In addition, knowledge of text structure can aid in the automaticity of word reading, thereby making text easier to read (Allington, 1983). While many educators and some researchers think that a focus on attention to print and word decoding, rather than a focus on fluency, is the key to reading success (Roller & Forsyth, 1998), there is strong agreement that students need to have more text available to them and more opportunities to interact with print (Stanovich, 1986).

In order to comprehend text, a reader must construct understanding through a mental representation of what is being read. If the student is reading the text in a choppy and nonfluent way, then the student will have difficulty assigning meaning to what is being read. Stanovich (1980) concluded that poor word-reading fluency places demands on a reader's ability to remember and process information. In addition, poor readers, who spend the majority of their time decoding, limit the amount of cognitive resources available for comprehension and are unable to process the meaning of sentences (Baker & Brown, 1984). This breakdown in fluency leads to an inability to comprehend text. Empirical and clinical evidence suggests that fluent oral reading increases reading comprehension and overall reading ability (e.g., Samuels, 2002). Likewise, direct

instruction in fluency may facilitate readers in moving from isolated word calling to prosodic reading flow (Kuhn & Stahl, 2000, 2003).

*Fluency and Self-Monitoring*

Student self-reports and self-assessment checklists are often recommended in textbooks designed to prepare future teachers of reading (e.g., Gipe, 1998). These self-evaluations allow students to make judgments based on their oral reading comprehension. In these circumstances, students are asked to judge what was read and how learning was redirected or monitored if the passage was not comprehended.

There is currently very little research relating fluency to self-monitoring and metacognitive processing. By redirecting this idea of a self-reflective and self-monitoring checklist to the area of fluency, students may have the tool they need to gain control of their learning and take a more active role in their oral reading development.

## Motivation and Reading

This section incorporates theories of motivation as they are applied to reading. Motivation to complete a task is not something that is stable and consistent across individuals or even within individuals. In fact, it is based on task difficulty, desire to complete the task, and underlying attitudes and goals connected to that task that ultimately give rise to the type of action an individual is motivated to take (Ryan & Deci, 2000). This fluidity inherent to motivation will be explored as it applies to students involved in the process of learning and reading.

*Motivation in Literacy*

Wigfield and Guthrie (1997) defined motivation for reading as a reciprocal relationship between individual student engagement and classroom contexts, composing a

multidimensional framework that incorporates 11 motivational dimensions or constructs. The first two dimensions, *reading efficacy* and *reading challenge,* are based on the efficacy belief constructs and the consideration that reading involves hard work to achieve. *Reading curiosity* and *reading involvement* focus on the intrinsic motivations that some students exhibit when reading, including reading for a specific goal or reading for enjoyment. The *importance of reading* is a dimension that describes the subjective assessment of the task of reading (Wigfield & Eccles, 1992). Extrinsic motivation for reading includes *reading for recognition*, *reading for grades*, and *competition in reading*, which includes performance goal orientation. The final dimensions associated with motivation for reading are labeled *social reasons for reading*, *reading compliance*, and finally, *reading work avoidance*, which address reasons why students might not like to read and may even attempt to evade reading experiences.

Attention to student interest and engagement during reading includes examining the texts that students are reading and being aware that students' motivations for reading are reflective of the "pull of the text" as explained by Schallert and Reed (1997). Although students are often required to read stories and text previously decided upon (Hoffman, 1987), teachers can increase students' motivation for reading by allowing their students to choose text that is appealing to them while maintaining that the text is at a level appropriate for the student (Schallert & Reed, 1997; Stahl & Stahl, 2004).

Reading frequency is an additional consideration when trying to motivate students to read and involve them in literacy experiences (Guthrie & Wigfield, 1999). Students who have greater access to text and, in particular, connected text, will have more opportunities to increase vocabulary, word identification, and reading automaticity

(Stanovich, 1986). One way teachers can increase the amount of time students spend reading is by encouraging reading performances (e.g., Wigfield, Wilde, Baker, Fernandez-Fein, & Scher, 1996). As students are practicing their text performance, they are engaged in text rereading, prosodic elements of text, and high-quality text interaction (Opitz & Rasinski, 1998).

## Technology Support of Reading Instruction

Support and encouragement for technological advances in education and literacy learning are growing at a rapid rate (e.g., Leu, 2005). Individuals are becoming more technologically savvy and classrooms are working toward incorporating new technologies into instruction and learning (Chambers, Abrami, McWhaw, & Therrien, 2001). Several large corporations have been working toward this incorporation of technology and education and have produced several programs for use in individual classrooms. The Watch Me!-Read software developed by IBM and The Fluency Coach available through Pearson Scott Foresman both use speech recognition to identify and correct problems in pronunciation during oral reading. With both of these programs, students receive immediate feedback as they read orally, and teachers can obtain individual student reports in order to monitor student progress. Students are able to hear how they have read the passages and are prompted to reread words that have been mispronounced. In some cases, they also receive word meanings and word pronunciations upon request. Unfortunately, the texts that are available through these programs are limited to the software design, and additional text downloads cost additional money. In addition, because these programs work through voice recognition, it is sometimes difficult for the software to recognize discrepancies in accents or speech

impediments, and these students are subsequently scored as misreading items. Students who read fluently and very quickly are sometimes marked incorrectly if they read more rapidly than the voice recognition component can handle.

A different technological advancement incorporates tutors and computers in order to enhance reading development for students at risk for reading difficulties (Chambers et al., 2001). The computer-assisted tutoring program, called Reading CAT, works on students' academic level and allows teachers to interact with tutors so that students are implementing the Reading CAT using the same elements on which they are working in class. The drawback of this innovation is that teachers must take extra time to input the materials and information into the Reading CAT so that the computer tutor can aid in students' learning. It is a cost-effective way, however, to provide computer-based tutors to large numbers of students with dynamic technology-mediated support for these at-risk readers.

In addition, Hong and Broderick (2003) provided evidence that instant video reviewing supports reflection by teachers and students in pre-school classrooms. Although these videos were geared toward student and teacher reflection on behaviors in the classroom, they provided actual footage of what was occurring and provided real time feedback necessary for all classroom participants. The notion of using computers and technology to enhance learning may support the idea of using real-time recording of students' individual reading for self-monitoring objectives.

## Teacher Impacts on Student Achievement

This section includes literature regarding teacher effects on students' learning, an issue that may have affected the students in my research study in a profound way.

Research on teacher preparation and pedagogical content training will be examined in conjunction with the impacts these differences may have on students' learning. Furthermore, teachers' motivational perceptions about their students and how these perceptions impact students' aspirations to achieve in literacy learning environments will be addressed.

*Teacher Quality*

In recent years, teacher preparation and certification have been studied with regard to their effects on student outcomes. It has been found that certification is an important component of productive teaching (Darling-Hammond, Berry, & Thoreson, 2001; Laczko-Kerr & Berliner, 2003; Morgenegg, 1989). Successful instruction in the early grades was evaluated through a study that involved five separate school districts and 300 new teachers. The academic growth of the elementary school students of under-certified, poorly trained teachers involved in the study was 20% lower than that of students in certified teacher classrooms (Laczko-Kerr & Berliner, 2002).

It may, therefore, be concluded that without pedagogical training, educators are less able to keep students on task, provide appropriate feedback to students, help students construct new knowledge, and evaluate student performance in their classes (Clarridge, 1990; Laczko-Kerr & Berliner, 2002, 2003).

*Teacher Effects*

In the areas of reading and math, teacher effects on their elementary school students' academic achievement have been found to reach statistical significance, with effect sizes of .72 to .85 (Rowan, Correnti, & Miller, 2002). Further investigation of the

elements of teacher-student relationships which affect achievement leads to findings in the areas of student motivation and teachers' motivational perceptions.

Competent teachers who set rules and expectations for their students as well as model interest in achievement and learning have been shown to have a positive impact on their students' motivation to learn and engagement in learning tasks (Sweet, 1997). Research indicates that teachers who help their students work toward autonomous and self-regulated learning enhance students' ability to achieve and students' determination to become self-motivated readers (Guthrie, Wigfield, Metsala, & Cox, 1999; Wigfield & Guthrie, 1995). In addition, teachers who work to provide support for their students in the context of a nurturing, student-centered classroom, enhance student learning by helping to develop independent, motivated students (Sweet, 1997). These classrooms, where interest in learning is modeled yet rules are maintained and enforced, are the classrooms where children have been deemed more motivated, more self-reliant, and less in need of outside influences to complete their academic tasks (Harter, 1982; Schunk, 1998).

## Summer School Impacts

This section investigates the sparse literature on summer school programs and their development. Because my research was conducted within a summer school setting, I considered summer school impact on student achievement and how enrollment in summer school may be related to student achievement in reading. I also include features necessary for a strong and positive summer school experience, together with summer school factors that negatively affect both students' motivation for learning and their overall academic success.

*Summer School Origins*

Summer school programs were developed with the primary goal of preventing delinquent behavior by keeping students off the streets (Austin, Rogers, & Walbesser, 1972). Prior to the twentieth century, students would attend school for perhaps two of the three summer months and held jobs for the month(s) that they were not in school. Then, in 1916, the first child labor laws were passed, and students who lived in the city needed something to do with their summers to stay busy, thus, the start of the first summer school program (Cooper et al., 2000).

Civic and community leaders provided recreational activities for students during the summer months from the early 1900s until the start of the 1950s. It was at this time that educators began to take advantage of the summer months to remediate or prevent summer learning deficits with their students (Austin et al., 1972). Today's summer schools are developed with very similar goals.

*Contemporary Summer School*

Today, summer school programs are designed to help students meet minimum requirements, allow students to retake a course that they were unable to pass during the regular school year, provide educational opportunities for students with disabilities, and include programs to meet the educational needs of students residing in areas with high concentrations of poverty (Cooper et al., 2000). Summer schools are also designed to close the education gap by providing additional time and instruction to struggling students in order to have an equalizing effect and bring all students to an average level of achievement prior to the next school year (Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996).

A meta-analysis completed by Cooper et al. (2000) indicated that the learning loss that students record upon returning from summer break is equivalent to 1.8 months of school achievement in grades 1-8, with smaller loss reported for grades 1 and 2 and greater losses reported as students increase in grade level. Support for this research was provided by McGavin (1997), who indicated that upon returning to school in the fall, students in the United States have lost a significant amount of literacy and computation abilities, and it requires several weeks to bring the students back to the level at which they were achieving prior to the end of the school year. Summer school programs are designed to help prevent these learning losses over the summer months.

*Summer School Gains and Setbacks*

Research has supported that summer learning programs focused on lessening or removing learning deficiencies have had a positive impact on the knowledge and skills of participants, resulting in a one-fifth standard deviation increase on outcome measures. Further conclusions from summer school research indicate that when specific learning goals are implemented and teachers and students are held accountable, positive gains can be made through summer school programs, although more positive gains were seen for middle-class students and cannot be generalized to all socioeconomic groups (Cooper et al., 2000).

Research conducted by Nichols (2002) looked at gains in students' self-esteem and motivation across time in a summer learning program for at-risk students in low-achieving areas. However, when students in an extended school year program in Detroit, Michigan, were polled about the extra days in school, they agreed that they did not like the extra time in school (70% to 76%) and agreed that they would not like to have extra

days in school the following year (88%), even though their achievement scores showed an increase over time (Green, 1998).

Empirical summer school findings obtained by Sainsbury, Whetton, Mason, and Schagen (1998) tracked eleven-year-old students as they attended a compulsory summer school because they had not met the national fourth-grade standards. In a repeated measures design using a test of reading comprehension, the researchers tested 925 students in the summer school group and 1,097 students who did not require summer school to gauge differences in achievement and learning across time. All students completed pre-tests in May, at the end of the school year, and then post-tests once they returned to their regular school year in September. Both groups showed a decrease on the post-test means by 3.0 points on a 50-point scale. These findings indicate that the summer school program did not lead to increase in students' reading achievement across time.

Implications from this study coincide with the recommendations of Cooper et al. (2000) that for summer school to be successful, specific learning curricula, teacher and student accountability, parental involvement, and alignment between regular school year and summer school reading goals and objectives must be in place. Other issues related to consistently declining scores in summer school programs are related to lack of student motivation and negative relationships with summer school teachers (Heron, 2003; Sainsbury et al., 1998).

# Chapter 3

## METHOD

### *Design*

The independent variables considered in this research design were the use of a self-monitoring checklist (yes or no checklist), the type of rereading that occurred within each group (video recorded, audio recorded, neither), and the time interval from pre-test to post-test as a within-subject variable. Thus, six groups of students were formed. Students used the self-monitoring checklist as a metacognitive tool to reflect on their oral reading upon completion of the reading segment. Three groups were assigned to complete the self-monitoring checklist throughout the intervention, and three groups were assigned to a no checklist condition. The type of rereading that occurred refers to the different reading situations to which the groups of students were assigned. Two groups used a computer-mediated video recorded rereading setting, two groups implemented audio-recorded rereading, and two groups were assigned to standard rereading instruction. All students in all groups were administered pre-test and post- test measures, and thus an additional independent variable of time was included to represent the beginning and end of the reading intervention. The dependent variables measured were the students' scores on measures of metacognitive reading awareness, motivation for reading, oral reading fluency, retell fluency, level of fluent oral reading ability, and reading comprehension ability.

Once the scores were obtained on each of the dependent variables, a repeated measures multivariate analysis of variance (MANOVA) was conducted to assess

statistical significance and to establish any main effects or interaction effects that may have occurred as a result of the intervention implementation.

The program design and summer school program implementation required the placement of all students into one of six intact treatment groups. All students were placed into classes according to district summer school policy, resulting in intact groups for the duration of the intervention. For the purpose of this study, all six reading and language arts teachers were randomly assigned to one of the three reading conditions based on the research design. Then, the two teachers placed in each reading condition were randomly assigned to a checklist or no checklist condition. This random assignment of teachers and intact student groups resulted in a 2 x 3 x 2 experimental design in which all six treatment groups were represented (see Table 1).

As will be explained in greater detail in a later section, Group One consisted of students who video recorded themselves using a digital video camera attached to a computer, played back and viewed the video recording via the computer and headphones, and then completed the fluency self-monitoring checklist (see Appendix A) before rereading the same text aloud. Students in Group Four also video recorded their oral reading using similar technology and viewed it through immediate playback, but these students did *not* complete a fluency self-monitoring checklist before rereading aloud.

Group Two students audio recorded their oral reading using hand-held tape recorders and 5-minute tapes. These students then played back and listened to their audio recordings and completed the fluency self-monitoring checklist before orally rereading the same text. Group Five students also audio recorded themselves using similar

technology and played back the audio recording, but these students did not complete the self-monitoring checklist prior to rereading the text aloud.

Group Three participants read the selected text aloud one time, completed the self-monitoring fluency checklist, and then reread the same passage aloud again. Group Six read the text out loud twice without completing the fluency monitoring checklist.

Table 1. *Intervention Design.*

| | Video Recording Component | | Audio Recording Component | | Rereading Component | |
|---|---|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Self-Monitoring Checklist YES | Group 1 | | Group 2 | | Group 3 | |
| NO | Group 4 | | Group 5 | | Group 6 | |

*Setting and Participants*

All data were collected during a six-week summer school session held at a middle school in a medium-sized Texas city. Following the students' fourth-grade academic year, student participants had been placed in fourth-grade regular education summer school classes with 8 to 15 students enrolled in each class. There were 150 students enrolled by the end of the first week of summer school. Each student was provided a parental consent/student assent form.

It is important to mention that many of these fourth-grade students had not met the required standard passing score on one or more portions of the statewide mandated assessment known as the Texas Assessment of Knowledge and Skills (TAKS). The TAKS consists of three components in fourth grade: reading, mathematics, and writing. Throughout this particular school district for the spring of 2005, 84% of all fourth-grade students had met the state standard for the reading section of the TAKS, 83% had passed the mathematics section, and 94% had met the writing standards. Overall, 75% of fourth graders in this district had met the standard on the TAKS for all three sections (Texas Education Agency, 2006a).

In addition to not meeting state TAKS standards, other students enrolled in the summer school program were students who had not met grade-level standards during the regular school year in order to advance to the fifth grade. Therefore, a large percentage of students involved in this research intervention were achieving below state standards. This restriction in range for student achievement was noticeable in the pre-test scores.

Students who had been absent often during the regular school year and had not met the state attendance requirements were also enrolled for the summer school session.

Only two students enrolled in the summer school session were registered at the request of their parents. While the district summer school policy did not usually allow parents to register their children for summer school on request, two students' parents had obtained special permission.

Although presence in summer school can be required for some students by the district and state in order for advancement to the next grade level, this was not the case at the fourth-grade level. Students were not required to achieve passing scores on class work or on the TAKS in order to advance to grade five. This proved to be detrimental to motivation and attendance for summer school. Indeed, daily attendance proved to be a problem for some students, and attendance concerns limited student participation in this intervention on a daily basis. Severe attendance deficits resulted in the removal of research data for six students who were not in attendance at least 70% of the six-week summer school period. In all, data on 117 students were used in the final data set due to attrition, lack of consent, missing district data, and low attendance.

Because all students were assigned to 1 of 12 fourth-grade classes prior to the start of summer school, the groups involved in this research intervention were intact groups. Each class had a homeroom teacher who had been randomly paired with another homeroom teacher by the school district prior to the first day of summer school. These two teachers were required to work together throughout the six-week summer school session. One teacher in the pair was assigned to teach mathematics to both classes, while the other teacher taught reading and language arts. This intact grouping and random assignment resulted in the direct participation of six reading and language arts teachers throughout the research implementation.

*Measures*

Given that this was a repeated measures design, assessments of students were conducted using the same measures at pre-test and post-test in order to gauge changes in scores for students' reading metacognition, reading fluency, reading comprehension, and motivation for reading. In order to measure students' knowledge of reading processes and strategies, students' reading metacognition was assessed using the Index of Reading Awareness (IRA; Jacobs & Paris, 1987). This measure is comprised of 20 multiple-choice questions, each with three responses. The responses are scored as a 0, 1, or 2, based on the level of metacognitive awareness represented by each answer choice. This index gauges students' metacognitive awareness during reading by examining the four constructs of conditional knowledge, regulation, planning, and evaluation. This measure was selected because it considers various aspects of the process of reading from a metacognitive standpoint. For the purposes of this study, the Index of Reading Awareness was added to measure whether there was an increase in overall scores from pre-test to post-test in metacognitive processes during reading. The range of possible scores on this index is 0 to 40 points. Students scoring on the higher end of the spectrum are said to be more metacognitively aware during reading, whereas those students who score on the lower end of the scale do not attend as much to what and how they read. The IRA was used in this study to aid in charting metacognitive reading awareness and growth over time.

The Motivation for Reading Questionnaire-Revised (MRQ; Wigfield & Guthrie, 1997) was used as a gauge of students' motivation for reading. This test measures specific dimensions of reading motivations derived from motivation theory (Wigfield,

Guthrie, & McGough, 1996). The revised MRQ contains 54 items and is divided into 11 motivational sections that could be identified as motivational constructs for reading motivation. The Likert scale responses on the MRQ range from 1 to 4. Students respond with a 1 when the motivation statement "is not at all" indicative of them and with a 4 when the statement is "very much like" them. The internal consistency reliabilities of the items on the original 82-item Motivation for Reading Questionnaire were tested and were described as adequate to good, ranging from .43 to .81 (Wigfield & Guthrie, 1997). While the revised MRQ contains fewer items than the original, the dimensions of motivation are more clearly defined, leading to a higher overall reliability and internal consistency reliabilities of .70 and higher on each of the revised scale items (Wigfield, Guthrie, & McGough, 1996).

Reading motivation has been defined as multidimensional by motivation theorists, and the 11 dimensions reflect this complexity. The first two dimensions, *reading efficacy* and *reading challenge,* are based on the efficacy belief constructs, and take into consideration the idea that reading involves hard work to achieve. *Reading curiosity* and *reading involvement* focus on the intrinsic motivations that some students exhibit when reading. These motivations can include reading for a specific goal or reading for enjoyment. Another element included in the MRQ is the *importance of reading* dimension that describes the subjective task of reading (Wigfield & Eccles, 1992). Extrinsic motivation, which includes performance goal orientations for reading, is captured in the dimensions labeled *reading for recognition*, *reading for grades*, and *competition in reading*. The final dimensions captured within the Motivation for Reading Questionnaire are *social reasons for reading*, *reading compliance*, and *reading work*

*avoidance*, which address reasons why students might not like to read and may even attempt to evade reading experiences.

The next measure used in this study was the Dynamic Indicators of Basic Early Literacy (DIBELS) Oral Reading Fluency (DORF) (Good & Kaminski, 2002). This measure includes nine benchmark protocols for use during the fourth-grade school year (fall, winter, and spring administration) and 20 separate probe protocols that can be used to measure student reading fluency throughout the academic year. Students were required to read the three spring benchmark passages written at the fourth-grade level. Each of the three spring benchmark passages is written in a different style to vary the reading material. The first passage was a historical fiction passage based on the Pony Express. The second passage was a fictional story based on a vacation trip. The final passage was written in a biographical style and concerned the life of Maria Mitchell. In the administration of the DORF measure, students were given 1 minute to read each passage. Passages are administered concurrently with the Retell Fluency (RTF) measures. Generally, the median score for the DORF is used as the indicator for oral reading fluency. For the purposes of this research intervention study, mean scores obtained through the three passages were utilized.

I chose this measure for fluency because it is relatively easy to administer and requires less than 5 minutes per student for administration. Also, each measure has been demonstrated to be a reliable and valid indicator of early literacy development and predictive of later reading proficiency to aid in the early identification of students who are not progressing as expected. Test-retest reliabilities for elementary students ranged from .92 to .97, and alternate form reliability of passages drawn from the same reading

level ranged from .89 to .94 (Tindal, Marston, & Deno, 1983). In addition, criterion-related validity was reported as ranging from .52 to .91 (Good & Jefferson, 1998).

The fourth-grade spring measures and benchmarks were used to score and analyze the DORF according to the grade equivalency of each student. According to normative information, fourth-grade students' benchmark goal for scoring at the $50^{th}$ percentile is 123 words correct per minute (WCPM) by the end of the spring semester (Hasbrouck & Tindal, 2005). Fourth-grade students achieving between the 25th and 75th percentiles can be expected to obtain scores between 68 and 119 WCPM on average in months 1 to 3 of the school year, the fall benchmark period. Average scores between 87 and 139 WCPM can be expected during the winter benchmark period in months 4 to 6 of the school year. Scores between 98 and 152 WCPM considered from the 25th to the 75th percentile can be expected in months 7 to 10 of the fourth-grade school year. Therefore, students scoring $\leq 98$ WCPM are considered to be at high risk for reading difficulties, and students achieving $\geq 152$ are considered at low risk for reading difficulties (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993; Hasbrouck & Tindal, 1992, 2005).

The Dynamic Indicators of Basic Early Literacy (DIBELS) Retell Fluency (RTF) (Good & Kaminski, 2002) was used as a basic reading comprehension measure. This measure was administered to all fourth-grade participants immediately after each of the three passages administered for the DORF measure. RTF administration consists of asking students to recall what they have just read. Students have up to 1 minute to retell the completed oral reading after each of the three benchmark passages has been read. Preliminary evidence indicates that the Retell Fluency measure correlates about .59 with oral reading fluency (Fuchs et al., 1993).

A second comprehension measure used in this research was the Texas Assessment of Knowledge and Skills (TAKS). This measure was administered to all students during the spring semester of fourth grade and then administered as a post-test assessment during the last week of summer school. The TAKS is comprised of four reading passages and 40 questions that require students to answer multiple choice questions as they use their comprehension to complete graphic organizers, make inferences, draw conclusions, synthesize main ideas, and answer explicit content questions.

The National Assessment of Education Progress (NAEP) has provided an oral reading fluency scale that was adapted from the Center for Education Statistics (see Appendix B) as cited by Worthy, Ivey, and Broaddus (2001). This four-level checklist measurement was used at pre-test and post-test assessments to quantify students' oral reading fluency ability. This type of checklist differs from the DORF assessment measure because it takes into consideration a student's attention to punctuation and reading prosody, in addition to word accuracy and automatic recognition of words in connected text.

The lowest rating on the scale is Level 1, in which a student demonstrates a low ability to recognize words and accurately read them aloud. In addition, students scoring in the Level 1 category appear to be frustrated by the text that they are encountering, meaning that the text is not at the independent or instructional level for those students. As a contrast, Level 4 readers read with automaticity and accuracy, as well as proper intonation and reading rate. These students appear to be very comfortable with the text that they are encountering and are rarely confronted with words that are unfamiliar to

them. The text is at the independent level for these students, and they are able to work their way through this text quite easily.

*Procedure*

Because this was a research intervention that required district approval and student and teacher participation, there were many levels of preparation, testing, training, and intervention that occurred prior to and during the six-week period. In addition to the research study, customary summer school instruction was taking place simultaneously with the study. In order to describe the procedures followed during summer school, I will address each of the considerations and occurrences before and during the six-week period.

*Preparation.* As groundwork for this research intervention, it was necessary to contact district personnel with a research prospectus and obtain consent for program implementation during the summer semester. Because the original research proposal had been a ten-week fall intervention, the summer school proposal had to be resubmitted to the district office, and the research study had to be reworked in order to fit into the summer school session. Once permission was obtained for implementation at the district level, it was necessary to contact the personnel at the middle school where the elementary summer school was taking place. Initial contact with school administrators provided me, the researcher, with details regarding summer school policy, classroom locations, teacher information, and class schedules. In addition, I was able to communicate more completely the research grouping, objectives, and implementation plans to the administrators. I was also afforded the opportunity to meet and talk about the research

study with all twelve classroom teachers and, specifically, with the six reading and language arts teachers.

Given the large number of classes and the scope of the research study, it was necessary to hire research assistants to facilitate testing days, organize daily materials, and carry out the daily oral reading interventions. Two research assistants were employed in the first week of June 2005. One research assistant was a recent graduate of a teacher preparation program at a local university. The second research assistant was one semester away from completing a bachelor's degree in deaf education at the same local university. Both research assistants received information regarding the research study and were trained on procedures and protocol prior to tester training. On June 9, 2005, both research assistants learned about the oral reading fluency intervention and the day-to-day implementation of the study. On June 10, both research assistants facilitated the preparation of testing materials and student protocol folders for pre-testing, and they were present for the tester training that evening.

Preparation for this research also included locating independent testers available on pre-test and post- test days. Due to the number of measures used in the pre-test phase and because all pre-test measures had to be completed in the first two days of the summer school session, a minimum of ten independent testers was needed. In addition, the summer school day began at 8:00 a.m. and ended at 12:30 p.m., creating a need for swift yet accurate testing. In order to prepare testers for the measures that they would be administering and to ensure fidelity of assessment, tester training was held on June 10, 2005, from 4 to 9 p.m. All testers were instructed in the administration of all measures (not including the NAEP Oral Reading Fluency Scale or the Texas Assessment of

Knowledge and Skills), and then the testers were required to practice the DIBELS oral reading and retell fluency measures until they were reliable. Of the ten testers who pre-tested students, eight had received at least 20 hours of previous training on the DIBELS measures because they had used these measures as part of another research project that concluded in May 2005.

In addition to personnel needed for this program, equipment had to be acquired prior to implementation. In all, it was necessary to obtain 10 Macintosh OS X computers with iMovie software, along with 10 digital video cameras to attach to those computers via FireWire connections, and ten mini-tripods to hold the digital cameras. In addition, 10 headphones with attached microphones were needed for the video-recorded groups. To save the students' daily video clips from the iMovie software, an external hard drive with a 1-Gigabyte capacity was obtained.

Other equipment needed for implementation included 10 audio cassette recorders with attached headphones, 300 5-minute recordable tapes, and 30 timers. Six additional cameras were used with six tripods in each of the classrooms during daily intervention to capture program procedures. Video cassettes were required to capture this footage.

Perhaps the greatest consideration in preparing for this study was the need for appropriately leveled texts for students to read. Because the program had originally been scripted for fall implementation in regular education classes, text selection had been intended for classroom teachers and students. However, as the teachers did not know the students prior to the start of summer school, it was not possible for the reading teachers to select proper instructional-leveled or independent-leveled texts for their students. In addition to this challenge, most teachers did not bring any reading materials with them

from their home elementary schools to place in their summer school classrooms at the middle school. This left many reading and language arts classrooms with very few books. As soon as I recognized this situation, I gathered and borrowed books from many sources in order to facilitate the research program. In all, over 5,000 books were acquired for the study before the start of summer school.

*Summer school fundamentals.* The summer school session began June 13, 2005, and concluded on July 21, 2005, and took place at a district middle school. The summer school day was from 8 a.m. to 12:30 p.m. and included a daily 30-minute recess/snack break and 30-minute lunch break. Students attended 90 minutes of reading/language arts instruction and 90 minutes of mathematics class daily, with 30 minutes built into the schedule for arrival, attendance check, class transitions, and dismissal. The summer school week was Monday through Thursday, with no school on Fridays throughout the entire session. In addition, no summer school occurred on Monday, July 4, 2005, resulting in a total of 23 days.

Teachers participating in the session were required to follow specific attendance and scheduling procedures. In addition, students were required to bring materials necessary for summer school attendance, including writing utensils, paper, and folders. There were no prerequisite lesson plan instructions or requirements. Teachers were required to supply their own instructional materials for mathematics and reading and language arts classes. In some cases, teachers did bring in books from their own classroom libraries.

The district did not have specific curriculum guidelines (i.e., scope and sequence) for teaching summer school classes. Instead, teachers were encouraged to teach those

skills students might not know based on student spring 2005 student data and prerequisite skills necessary for entering fifth grade. This relative degree of latitude resulted in the implementation of individual lesson plans and instructional strategies in each of the reading and math classes throughout the summer session.

*Testing.* Participation in this research intervention was compulsory as per district decision; therefore, all fourth-grade summer school students completed daily oral reading intervention prescribed by their group condition. In order to utilize scores from pre-test and post-test data for the analysis, students were provided with parental consent/student assent forms on the first day of summer school. The forms were collected throughout the first week of summer school, and all 150 forms were returned to the research team. Only two students did not receive consent for their scores to be used in the research data analysis. Because implementation of this intervention was a district decision, these two students continued to participate in the intervention, although their scores were removed from the data set.

Pre-testing of all fourth-grade students took place on the first two days of the six-week period on four of the six measures. It was necessary to pre-test all of the fourth-grade summer school students before their intervention training occurred. This was to prevent any reading score effects from program preparation, examples and definitions of fluent oral reading, or explanations of fluency self-monitoring. Research shows that simply cueing students to read in a fluent manner, such as focusing on accuracy and rate, can have a positive impact on their oral reading fluency abilities (Rasinski, 2003).

This testing was administered by the ten independent testers mentioned above. In addition, the students' spring 2005 TAKS data, collected previously by the students'

fourth-grade teachers at their respective elementary schools, were available from the district office. After all pre-testing and post-testing had occurred, I used the NAEP Oral Reading Fluency Scale to evaluate the students' oral reading. Only one student was not in attendance on June 13-14, 2005, so this student was pre-tested on his first day of attendance, June 16. In all, pre-test data were collected on 150 fourth-grade students within the first week of the summer school program.

Post-testing of all students occurred on the final four days of summer school, July 18-21, 2005. The reading and math TAKS tests took place on July 18-19 respectively, and were administered by the students' summer school homeroom teachers. Scores were reported to the summer school principal and then reported to me on the first day following summer school, July 22, 2005. Post-testing on the Index of Reading Awareness, the Motivation for Reading Questionnaire, and the DIBELS Oral Reading Fluency and Retell Fluency measures took place on July 20-21. This post-testing was administered by the same ten independent testers exactly as the pre-testing measures were administered. All ten independent testers attended one 3-hour refresher testing session on July 18 from 6 to 9 p.m.

Of the 150 students involved in the pre-testing phase of the research, 129 of these students were subsequently post tested on the last two days of summer school. The final number of research participants in the data set was 117. This reduction occurred due to six students not meeting the 70% attendance criterion, four students whose district TAKS scores were unavailable, and two students' lack of parental consent.

*Training.* Students received intervention training on Days 3 and 4 of summer school, June 15-16, 2005. Once all 12 fourth-grade summer school classes had been

assigned to one of six different groups and all pre-test measures had been administered, students and teachers in the six treatment groups received two training sessions. These training sessions were designed to ensure that participants and educators were familiar with all video or audio equipment used by their group. The classes assigned to the checklist groups were also trained on correct usage of the fluency self-monitoring checklist.

These two training sessions required a maximum of 30 minutes per class and were conducted in the room in which the students were implementing their particular reading intervention program. The teachers responsible for the students during their reading time were present for the training sessions. There were two primary goals of conducting the instructional program training with the reading and language arts teachers. One goal was to inform the teachers regarding what would occur in their classrooms daily during the 4-week implementation. A second goal was to provide a heuristic for oral reading fluency development and to encourage the need for fluent oral reading as a component of reading success.

To train the students on their aspect(s) of the oral reading fluency intervention, it was necessary to model exact occurrences through the program. To implement this training, I used the computer and video components in addition to the audio recording devices to record a fourth-grade student's oral reading fluency. This model was a fourth-grade student from another school district and was not involved in the research intervention in any other way. The first text read was at the student's independent level. The student was able to read this text with great accuracy and automaticity, proper rate, and without any word identification mistakes. I then had this student read a book that was

at his frustrational level. He made many mistakes with word identification in the passage, reading at a reduced rate, and was not able to recognize words with high accuracy or automaticity. His frustration was apparent as he was reading, and there was a strong contrast between the two text readings. The student read each text for 2 minutes in order to simulate what would take place in the oral reading fluency intervention in the summer school setting.

These two training videos and audio-recorded tapes were used for the training sessions with all twelve fourth-grade classes. The students in the video recording groups watched the video of the reader as he read both texts, whereas students in the audio recording and rereading groups listened to the cassette tape of the model reader. These students would experience the same type of reading during their summer school activities. I did not want students in the audio or rereading group to watch the video and then have trouble relating it to their experiences during the intervention. Likewise, I did not want students who would be video recorded to answer questions based on an audio tape, and then have difficulty transferring those connections and conclusions to their video-recorded experiences during the intervention sessions.

Before, during, and after these demonstrations, I discussed oral reading fluency and fluency models with the fourth-grade students. Fluency vocabulary (such as prosody, rate, automatic word recognition, and self-correction) was introduced, defined, and discussed with all 12 classes. It was clear that some of this fluency vocabulary was new to students and teachers alike. I posed questions regarding the model student's reading of both texts, and we considered the ease with which the model reader was able to read the first text and then his difficulty with the second text. We briefly touched on different

types of text and how it feels to read a text that is too difficult. Finally, we talked about similarities and differences between the reading models and what changes could have been made to improve the reading of his second text.

As the principal investigator in this research program, I conducted each of the training sessions to maintain uniformity among all groups. I used scripted questions and exact phrasing with each of the groups when discussing the model reader's strengths and weaknesses. The main differences that occurred when training each class were the students' questions and students' answers to my questions. Each class also received different training because of the equipment and checklist usage dependent upon the treatment group to which the class had been assigned.

Each training session occurred on days 3 and 4 of the summer school session. Day 1 of the training session was devoted to watching or listening to the model reader, discussions of oral reading fluency, asking and answering questions regarding oral reading fluency, and reviewing the self-monitoring checklist with students assigned to the checklist groups. The trainings involving the metacognitive checklist required more instructional time because students reviewed the checklist with me, and then we used the checklist to evaluate the two readings that we heard or viewed from the model reader. Time was spent explaining each checklist item and impressing upon the students that there were no right or wrong answers on the checklist, because it would certainly be different for every individual reading. I then spent time assessing the students on their understanding of the self-monitoring checklist and the purpose of the checklist. I also answered questions that students had about the checklist, its use, and its purposes.

Day 2 of the training session was devoted to practicing the oral reading fluency program implemented in each classroom. The video recording groups required the longest amount of time for training because they had to learn how to use the digital video camera, the iMovie computer software, and the timer. While many students in Group One and Group Four stated that they had prior experiences with computers, all of them expressed that they had never used a computer in conjunction with a video camera. These students also had to be trained to play back their videos for immediate viewing and listening. Group One, the video recording group that was also assigned to the checklist condition, required the most training time on Day 2 because a checklist review was given before the practice session began utilizing all components of the oral reading program.

The audio recording groups required training time to learn how to record their reading while using the timer, rewind the tapes back to the beginning, and then play back the audio recording to listen to their reading. The audio group condition with the checklist, Group Two, was also provided with a review of the metacognitive checklist before they were asked to proceed with their practice session.

The rereading groups did not require as much training time as the other groups, because there was not any technology other than the timer associated with their treatment condition. The rereading group that was also assigned to the checklist condition required a review of the checklist and its usefulness.

All students received a training card I prepared to aid them through the implementation of their specific oral reading fluency program (see Appendix C). These cards were laminated and kept at the stations where the intervention occurred so that students could refer to the directions if necessary.

*Program implementation.* Intervention implementation began at the start of the second week of the six-week session, June 20, 2005, and was completed on the final day of the fifth week of the summer school session, July 14, 2005. In all, there were 15 possible days of program implementation with all six groups during the four weeks of intervention. Each week of intervention implementation began with a scripted overview of oral reading fluency and goals for the program in which each of the students was placed (see Appendix D). This intervention cuing reminder was conducted prior to the start of each group's fluency activity. In addition, all groups were reminded how to use the timer for 2 minutes and the reason for using the timer when practicing reading fluency. Finally, all groups with computers and video cameras or tape recorders and 5-minute tapes were briefed on equipment use. Students were prompted to use the training cards at the intervention stations and were reminded to ask their research assistant questions or for help with the equipment when necessary.

Day-to-day program implementation was very structured and was agreed upon by the school administrators and all six reading and language arts teachers prior to the intervention. Because there were twelve classes held in six classrooms every day, it was necessary for all researchers to be highly organized and prepared prior to entering the classrooms. Groups of four to five students were pulled out of their regular reading class to a specific place in the classroom that the teacher had designated previously. In this way, we hoped to reduce the disruption that occurred through the program implementation while maximizing student engagement and attention. Because the reading and language arts class was in session during the research intervention, all equipment was arranged and ready for use prior to student arrival.

Both research assistants and I were responsible for specific classrooms and interventions at given times throughout the available 8:00-12:00 time frame. As the principal investigator, I was responsible for program implementation in one classroom (two of the twelve classes) and was available the rest of the time to oversee implementation in other classrooms and to ensure that the research assistants were following implementation protocols.

Table 2 illustrates the daily schedule of this research study. The time listed was the start time for the oral reading fluency intervention for that specific class as designated by the reading teacher. Groups of students followed the fluency program from the scheduled start time until all students had completed their oral reading fluency activity for that day. The group number indicates the reading condition of that class as designated by the reading and checklist treatment conditions listed: VR indicates a video recorded group, AR an audio recorded group, RR a rereading group, NCL a no checklist group and WCL a with checklist group. Finally, the persons responsible for implementation are listed as the principal investigator (PI), research assistant 1 (RA 1), and research assistant 2 (RA 2).

Table 2. *Daily Intervention Schedule.*

| Time | Group | Treatment | Researcher |
|---|---|---|---|
| 8:00 a.m. | Four | VRNCL | RA 1 |
| 8:00 a.m. | Five | ARNCL | RA 2 |
| 8:45 a.m. | One | VRWCL | PI |
| 8:45 a.m. | Three | RRWCL | RA 1 |
| 9:00 a.m. | Two | ARWCL | RA 2 |
| 9:05 a.m. | Six | RRNCL | RA 1 |
| 9:40 a.m. | Four | VRNCL | RA 1 |
| 10:00 a.m. | Five | ARNCL | RA 2 |
| 10:45 a.m. | Six | RRNCL | RA 1 |
| 10:45 a.m. | Two | ARWCL | RA 2 |
| 11:10 a.m. | Three | RRWCL | RA 1 |
| 11:15 a.m. | One | VRWCL | PI |

During day-to-day program implementation, participants in Group One video recorded their oral reading for 2 minutes using the iMovie software program, played back and viewed the video recording, and then completed the fluency self-monitoring checklist before rereading the same text for 2 additional minutes. Five computers with video cameras were set up in the classroom where Group One students completed their activity, so a maximum of five students participated at once. As soon as the five students had

completed their oral reading fluency activity, they turned in their checklists and returned to the reading and language arts activity assigned by the classroom teacher. The next group of five students then came to the station.

Students in Group Two were required to complete their audio recording and self-monitoring checklist on a daily basis. These students would read into an audio recorder for 2 minutes, listen to the audio recording of their reading, complete the self-monitoring checklist, and reread the same text aloud for 2 minutes. As with Group One, this activity took place with a maximum of five students at a time during reading instruction. Once the students had completed the activity, they placed their tapes and checklists in the appropriate boxes and returned to the activity designated by their reading teacher. Again, the next group of five students took their places.

Each day, students in Group Three completed their oral reading and self-monitoring checklist activity. These students read aloud for 2 minutes, completed their self-monitoring checklists, and then reread the same text aloud for 2 minutes. A maximum of five students completed this activity at one time during regular reading class. Once the students had completed the activity, they put their checklists in the appropriate box and resumed the activity assigned by their reading teacher.

Students in Group Four, the video recording, no self-monitoring checklist group, were required to read the text aloud for 2 minutes while video recording themselves through the computer. These students then watched and listened to the video recording of their reading, and then reread the same text aloud for 2 minutes. There were five computers arranged for student use in the Group Four classroom, so a maximum of five students participated in the activity at once. As students rotated through the activity, they

completed each aspect of the intervention and then returned to the classroom reading group.

Each day, Group Five students participated in the audio recording, no self-monitoring checklist group activity. That is, they read the text aloud for 2 minutes while audio recording, listened to the audio recording of their reading, and then reread the same text aloud for 2 minutes. Once they had completed this activity, these students returned to participation in their reading and language arts class.

The sixth group of students in the rereading, no self-monitoring checklist group were required to read the text aloud for 2 minutes, pause, and then reread the same text aloud for 2 minutes. Group Six participants completed this oral reading fluency intervention daily and then resumed their regularly assigned reading activity. As with all of the other groups, a maximum of five students participated in the rereading condition at one time. Although there were no equipment issues, it was best to have no more than five students reading at a time for noise and attention considerations. In all, students involved in this program intervention were pre-tested and trained during Week 1 (days 1 to 4), involved in the oral reading fluency intervention in Weeks 2 through 5 (days 5 to 19), and post-tested in Week 6 (days 20 to 23). Data on students who did not attend at least 70% of the summer school days (that is, at least 16 days) were not included in the final analysis.

During all four intervention weeks, each student in Groups One through Six was assessed on one designated fluency passage from the DIBELS Oral Reading Fluency probes (Good & Kaminski, 2002). This assessment occurred on Thursdays, the last day of each week of the study. Each student, regardless of treatment condition, was given 1

minute to read a DORF probe passage to an independent tester. The results of the four probes were recorded in the same way as the pre-test DORF. A progress record of students' oral reading fluency was thereby maintained over the course of the intervention. These scores were reported weekly to the reading and language arts teachers to give them an indication of any changes in their students' oral reading fluency.

*Data Analysis*

Six scores were collected from each of the 117 participants on the dependent variables at both pre-test and post-test times. These twelve total scores were then used in the data analysis, a 2 x 3 x 2 repeated measures multivariate analysis of variance (MANOVA). In this research design, the dependent variables measured through the MANOVA were the scores recorded on the DIBELS Oral Reading Fluency measure, the DIBELS Retell Fluency measure, the National Association of Education Progress fluency scale, the Texas Assessment of Knowledge and Skills, the Index of Reading Awareness, and the Motivation for Reading Questionnaire. These dependent variables were analyzed to provide information on the impact of the independent variables implemented within the study. The independent variables implemented were time (from pre-test to post-test), the self-monitoring checklist assigned to half of the intervention groups, and the students' reading condition throughout the duration of the oral reading intervention (video recording, audio recording, or neither).

As previously described, each student was asked to read three passages and retell the passages to obtain scores on the DIBELS Oral Reading Fluency and Retell Fluency measures. These three DORF scores were averaged for each student at pre-test and post-test times. In addition, all three of the Retell scores were averaged in order to obtain one

score at each testing time for each student. NAEP Oral Reading Fluency Scale scores ranging from 1 to 4 were given for each of the three passages read during each testing session. I used the NAEP Oral Reading Fluency Scale to score the students' oral reading after all pre-testing and post-testing had occurred. Following my evaluation using the NAEP Oral Reading Fluency Scale, 25% of the scores obtained were then reevaluated by an independent tester. Interrater reliability of .96 was achieved for the NAEP variable scores. A NAEP mean was then derived for the three pre-test and three post-test oral readings and placed into the data set. The TAKS scores were obtained through district records and were already in standard score form, ranging from 0 to 100. The Index of Reading Awareness score, which ranges from 0 to 40 points, was also placed into the data set without any alterations. Finally, the Motivation for Reading Questionnaire score was obtained by taking each response from the 54 Likert scale items and assigning a score of 1 to 4. Most items were scored directly as they appeared on the Likert questionnaire, although items 4 and 6 in the compliance construct for motivation, as well as all four items (items 23, 27, 28, and 52) in the reading work avoidance construct for motivation, were reverse scored prior to MRQ computation. These six MRQ statements are reverse scored because they are stated negatively with regard to motivation for reading. To reverse the direction of the items during scoring, a score of 1 was converted to a 4, a score of 2 converted to 3, a score of 3 converted to 2, and a score of 4 was converted to a 1. Once scores were obtained on each item, a mean of all items was obtained, resulting in an MRQ average score between 1 and 4.

All dependent variable scores were used as the repeated measures, at time one and time two, to obtain a multivariate F value using the SPSS (Version 11.0) statistical

analysis package (SPSS, Inc., 2001). Once the multivariate value was attained, univariate F tests were conducted on all independent variables and interactions that were found to be significant. After these univariate tests were conducted, pairwise comparisons were run in order to find all significant between and within subject interaction effects.

# Chapter 4

## RESULTS

The results presented here are divided into three parts in order to address the hypotheses set forth by this oral reading fluency intervention study and additional exploratory analyses. The first part examines the quantitative segment of the research, with multivariate analysis, tables, and figures that illustrate the data and any changes that may have occurred in student achievement due to the intervention components and participation in the research study. Part Two considers results organized by the hypotheses set forth prior to intervention implementation. The last section presents the results of exploratory analyses that look at a synthesis of the dependent variables through all student data apart from the specific intervention components in which they participated throughout the research study.

### Part I: Results of Multivariate Analysis

The first step before analyzing the data was to ascertain that data had been collected on all students involved and that the data were correctly recorded and complete. While 150 students were included in the pre-testing phase in the first two days of summer school, there were not 150 students in the final sample size. This attrition was due, in part, to 23 students not returning to summer school during the final week in order to complete the post-testing phase. In addition, four students were excluded due to missing TAKS scores from the district office. Six students' scores were not included due to the number of absences they incurred throughout the study (a rule of 70% participation and attendance was used in order to include or exclude students from the data sample). Therefore, data were analyzed for a total of 117 students.

Once the data were checked for accuracy and students with full data sets were entered, I looked for group differences at pre-test and post-test between all six treatment groups mean scores by completing one-way ANOVAs on all data at Time 1 and Time 2 on each of the six dependent measures. I then completed a repeated measures multivariate analysis of variance (MANOVA) on the sample of 117 students. The MANOVA (multivariate analysis of variance) was used because all six dependent variables measured have been shown to be related through prior empirical research and the theoretical rationale set forth by this research intervention. Completing several ANOVAs on the complete data set may have increased the probability of a type I error rate (that is, finding significance when there is no significance) and may have ignored important correlational relationships between variables that are incorporated within a multivariate design (Grimm & Yarnold, 2000; Stevens, 2002). Additionally, Stevens (2002) suggested that although the groups may not differ significantly from one another on any *one* variable, the set of *joint* variables may significantly differentiate groups. Therefore, a MANOVA was performed to provide a simultaneous analysis of the multiple dependent and independent variables involved in the research design (Tabachnick & Fidell, 1989). This MANOVA analysis was considered a repeated measures design because the students were administered the same assessments at both Time 1 and Time 2. Data were entered for all students in the six intervention groups on all six dependent variable measures, including six scores on assessments at pre-test time and six scores at post-test time.

There were a total of 20 students included in the data for Group One, the video recorded with self-monitoring checklist group (VRWCL). Group Two, the audio recorded with self-monitoring checklist group (ARWCL), consisted of 25 students. Group Three,

rereading with a self-monitoring checklist (RRWCL), had 16 students in the final data analysis. The groups that did not complete a self-monitoring checklist concluded the study with Group Four, video recorded reading (VRNCL), with 21 students, Group Five, audio recording reading (ARNCL), with 11 students, and Group Six, regular rereading (RRNCL), with 24 students in the data set. Because the six groups involved in this analysis did not consist of equal numbers of participants, this multivariate research design was considered an unbalanced design.

The measures used at both Time 1 and Time 2 were the Dynamic Indicator of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency (DORF), DIBELS Retell Fluency (RTF), the National Assessment of Educational Progress (NAEP) Oral Reading Fluency Scale, the Texas Assessment of Knowledge and Skills (TAKS), the Index of Reading Awareness (IRA), and the Motivation for Reading Questionnaire (MRQ).

Tables 3 through 8 display descriptive data on all six intervention groups across time on the six dependent variables. Group size is indicated in each table along with group means and standard deviations. Additionally, checklist condition and rereading condition information is provided for all groups. All data tables are followed with results of the pre-test and post-test one-way ANOVAs. Recall that these ANOVAs examined overall mean differences in the six groups across time on the dependent variables but were not used to conclude information regarding checklist and rereading condition to which each group was assigned.

Table 3 provides descriptive data at pre-test and post-test of the means and standard deviations achieved by all six groups involved in the intervention on the DIBELS Oral Reading Fluency dependent variable.

Table 3. *Means (and Standard Deviations) on DORF for all six groups.*

| | Video Recording Condition | | Audio Recording Condition | | Rereading Condition | |
|---|---|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Checklist Condition YES | Group 1 n = 20 | | Group 2 n = 25 | | Group 3 n = 16 | |
| | 95.5 (25.3) | 103.2 (25.6) | 95.6 (25.7) | 102.9 (25.4) | 98.6 (21.0) | 109.4 (21.7) |
| NO | Group 4 n =21 | | Group 5 n = 11 | | Group 6 n = 24 | |
| | 86.5 (26.7) | 96.2 (26.0) | 99.7 (30.5) | 107.5 (34.3) | 97.3 (23.8) | 111.9 (29.7) |

Two one-way ANOVAs run on the group means show no significant differences between the six treatment group means at pre-test or post-test time on the DORF.

Table 4 includes the pre-test and post-test means and standard deviations achieved by all six intervention groups on the DIBELS Retell Fluency dependent variable.

Table 4. *Means (and Standard Deviations) on RTF for all six groups.*

| | Video Recording Condition | | Audio Recording Condition | | Rereading Condition | |
|---|---|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Checklist Condition | Group 1 n = 20 | | Group 2 n = 25 | | Group 3 n = 16 | |
| YES | 43.8 (19.5) | 47.7 (17.4) | 36.0 (14.1) | 36.1 (13.7) | 43.2 (21.9) | 38.1 (17.2) |
| | Group 4 n =21 | | Group 5 n = 11 | | Group 6 n = 24 | |
| NO | 32.6 (15.2) | 48.5 (25.7) | 34.7 (18.0) | 45.8 (15.3) | 39.9 (17.8) | 45.8 (19.5) |

The preliminary one-way ANOVAs indicated that the six group means on the Retell Fluency measure were not significantly different from one another at pre-test or post-test.

Table 5 presents descriptive data on the National Assessment of Educational Progress Oral Reading Fluency Scale for all six groups at pre-test and post test.

Table 5. *Means (and Standard Deviations) on NAEP for all six groups.*

| | Video Recording Condition | | Audio Recording Condition | | Rereading Condition | |
|---|---|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Checklist Condition | Group 1 n = 20 | | Group 2 n = 25 | | Group 3 n = 16 | |
| YES | 2.2 (0.7) | 2.6 (0.5) | 2.1 (0.6) | 2.1 (0.4) | 2.1 (0.8) | 2.4 (0.6) |
| | Group 4 n =21 | | Group 5 n = 11 | | Group 6 n = 24 | |
| NO | 2.0 (0.7) | 2.1 (0.5) | 1.7 (0.7) | 2.2 (0.6) | 2.1 (0.6) | 2.5 (0.8) |

Although no significant group differences were indicated for the group means at pre-test time, the one-way ANOVA completed on the means at post-test resulted in a significant difference on the NAEP Oral Reading Fluency Scale variable, $F(5, 111) = 4.230$, $p < .05$, indicating that the means on the six treatment groups were statistically different from one another at Time 2.

Table 6 shows pre-test and post-test data on the Texas Assessment of Knowledge and Skills for all six groups.

Table 6. *Means (and Standard Deviations) on TAKS for all six groups.*

| | Video Recording Condition | | Audio Recording Condition | | Rereading Condition | |
|---|---|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Checklist Condition | Group 1 n = 20 | | Group 2 n = 25 | | Group 3 n = 16 | |
| YES | 62.3 (15.9) | 70.0 (13.4) | 57.0 (14.6) | 61.6 (16.6) | 63.8 (13.6) | 69.7 (16.5) |
| | Group 4 n =21 | | Group 5 n = 11 | | Group 6 n = 24 | |
| NO | 60.0 (15.7) | 66.4 (17.0) | 70.9 (10.8) | 75.0 (13.6) | 72.7 (14.5) | 74.3 (12.6) |

One-way ANOVAs indicated that while a significant difference between the TAKS means for the six treatment groups was shown at pre-test, $F(5, 111) = 3.747$, $p < .05$, no post-test differences were recorded.

Table 7 shows descriptive data on the Index of Reading Awareness for all six intervention groups at pre-test and post-test.

Table 7. *Means (and Standard Deviations) on IRA for all six groups.*

| | Video Recording Condition | | Audio Recording Condition | | Rereading Condition | |
|---|---|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Checklist Condition | Group 1 n = 20 | | Group 2 n = 25 | | Group 3 n = 16 | |
| YES | 26.7 (4.2) | 25.2 (3.5) | 26.9 (4.9) | 27.4 (4.5) | 26.3 (2.6) | 25.6 (3.9) |
| | Group 4 n =21 | | Group 5 n = 11 | | Group 6 n = 24 | |
| NO | 27.1 (3.2) | 25.1 (3.5) | 28.0 (3.7) | 29.1 (4.5) | 27.4 (3.1) | 28.3 (2.8) |

Preliminary findings from the one-way ANOVAs indicated no difference among treatment groups at pre-test but a significant difference among the six means at post-test, $F(5, 111) = 3.773$, $p < .05$, for the Index of Reading Awareness variable.

Finally, Table 8 indicates the means and standard deviations for all six groups at pre-test and post test on the Motivation for Reading Questionnaire.

Table 8. *Means (and Standard Deviations) on MRQ for all six groups.*

| | Video Recording Condition | | Audio Recording Condition | | Rereading Condition | |
|---|---|---|---|---|---|---|
| | Pre-Test | Post-Test | Pre-Test | Post-Test | Pre-Test | Post-Test |
| Checklist Condition YES | Group 1 n = 20 | | Group 2 n = 25 | | Group 3 n = 16 | |
| | 2.6 (0.6) | 2.7 (0.6) | 2.9 (0.5) | 2.7 (0.5) | 2.8 (0.4) | 2.9 (0.4) |
| NO | Group 4 n =21 | | Group 5 n = 11 | | Group 6 n = 24 | |
| | 2.7 (0.5) | 2.8 (0.4) | 3.0 (0.3) | 3.0 (0.3) | 2.8 (0.4) | 2.7 (0.4) |

No significant differences were reported from either of the two one-way ANOVAs conducted on the means at pre-test or post-test between groups on the Motivation for Reading Questionnaire variable.

A repeated measures MANOVA was conducted on all between subjects and within subjects variables using the SPSS statistical package. The between subjects analysis involved taking students' mean performance across time and comparing those means for reading condition, checklist condition, and the reading condition by checklist condition interaction. Results of the *F* statistic estimated with Wilks' Lambda indicated

significance for the reading condition main effect and the checklist condition main effect at $p < .05$, but no significance was found for the reading condition by checklist condition interaction effect.

In addition, a within subjects analysis, where each participant is measured at two or more levels of a variable, was conducted. Participants were measured at the variables of time (pre-test to post-test), time by reading condition interaction, time by checklist condition interaction, and time by reading condition by checklist condition interaction. Significance of the F statistic estimated with Wilks' Lambda was concluded for the time main effect and for the three way effect of the time by reading condition by checklist condition interaction at $p < .05$. No other p value reached significance.

*Between Subjects Effects*

Significant multivariate *F* indicates that the dependent variables vary as a function of the independent variables. In order to interpret the significant multivariate *F* values obtained through the initial MANOVA, I examined follow-up univariate ANOVAs in order to focus on the effects of the independent variables on each dependent variable. The following univariate tests were conducted for between group main effects based on the multivariate significance obtained:

(1.) the type of reading condition that each group engaged in (comparing video groups, audio groups, and groups with regular rereading instruction) and

(2.) the self-monitoring checklist condition (comparing groups with the self-monitoring checklist and groups without a metacognitive checklist).

The Tukey post hoc test (with mean difference significant at the .05 level) was performed on the independent variable of reading condition because this variable included three

levels. No post hoc tests had to be performed on the checklist condition variable because only two groups were considered here.

*Reading Group Condition Main Effect*

Table 9 indicates the results obtained in the between group univariate analysis for reading condition.

Table 9. *Reading Condition Main Effect.*

| | Measure | df | *F* | Sig. |
|---|---|---|---|---|
| ORF | Contrast | 2 | 1.245 | .292 |
| | Error | 111 | | |
| RTF | Contrast | 2 | 1.453 | .238 |
| | Error | 111 | | |
| NAEP | Contrast | 2 | 2.126 | .124 |
| | Error | 111 | | |
| TAKS | Contrast | 2 | 1.931 | .150 |
| | Error | 111 | | |
| IRA | Contrast | 2 | 2.908 | .059 |
| | Error | 111 | | |
| MRQ | Contrast | 2 | 1.545 | .218 |
| | Error | 111 | | |

Although the multivariate *F* resulted in significance for the reading condition variable, video recorded, audio recorded, and regular rereading instruction, the results of this univariate analysis do not show significance for any of the dependent variables tested. This can occur because the multivariate test is more powerful than the univariate test and because the multivariate test takes into consideration the intercorrelation of the dependent variables, whereas the univariate tests observe one dependent variable at a

time. That is, while the univariate tests did not show group differences for the reading condition on any of the dependent variables, through the multivariate analysis, the weighted linear composite of those dependent variables showed significant differences for the main effect of reading condition (Grimm & Yarnold, 2000).

*Checklist Condition Main Effect*

Table 10 indicates the univariate analysis results obtained when comparing the two checklist conditions on each dependent variable.

Table 10. *Checklist Condition Main Effect.*

| | Measure | df | *F* | Sig. |
|---|---|---|---|---|
| ORF | Contrast | 1 | .043 | .837 |
| | Error | 111 | | |
| RTF | Contrast | 1 | 3.005 | .086 |
| | Error | 111 | | |
| NAEP | Contrast | 1 | 2.556 | .113 |
| | Error | 111 | | |
| TAKS | Contrast | 1 | 5.721 | .018* |
| | Error | 111 | | |
| IRA | Contrast | 1 | 3.612 | .060 |
| | Error | 111 | | |
| MRQ | Contrast | 1 | 1.097 | .297 |
| | Error | 111 | | |

* Significance at the .05 level.

The univariate results showed significant differences at $p < .05$ for the TAKS variable only. This significant dependent variable could indicate that the greatest contributor to

the significance of the multivariate *F* for the checklist main effect may have been the TAKS dependent variable, even though the multivariate *F* is a weighted linear combination of all dependent variables.

TAKS results indicated that the composite average of the mean scores for the three groups with the self-monitoring checklist, Groups One, Two, and Three ($M = 64.1$) was 5.8 points lower than the total average of the TAKS mean scores for the no checklist groups, Groups Four, Five, and Six ($M = 69.9$). These means represent scores summed across pre-test and post test. Figure 1 illustrates this TAKS mean difference for the self-monitoring checklist groups versus those groups in the no checklist condition.

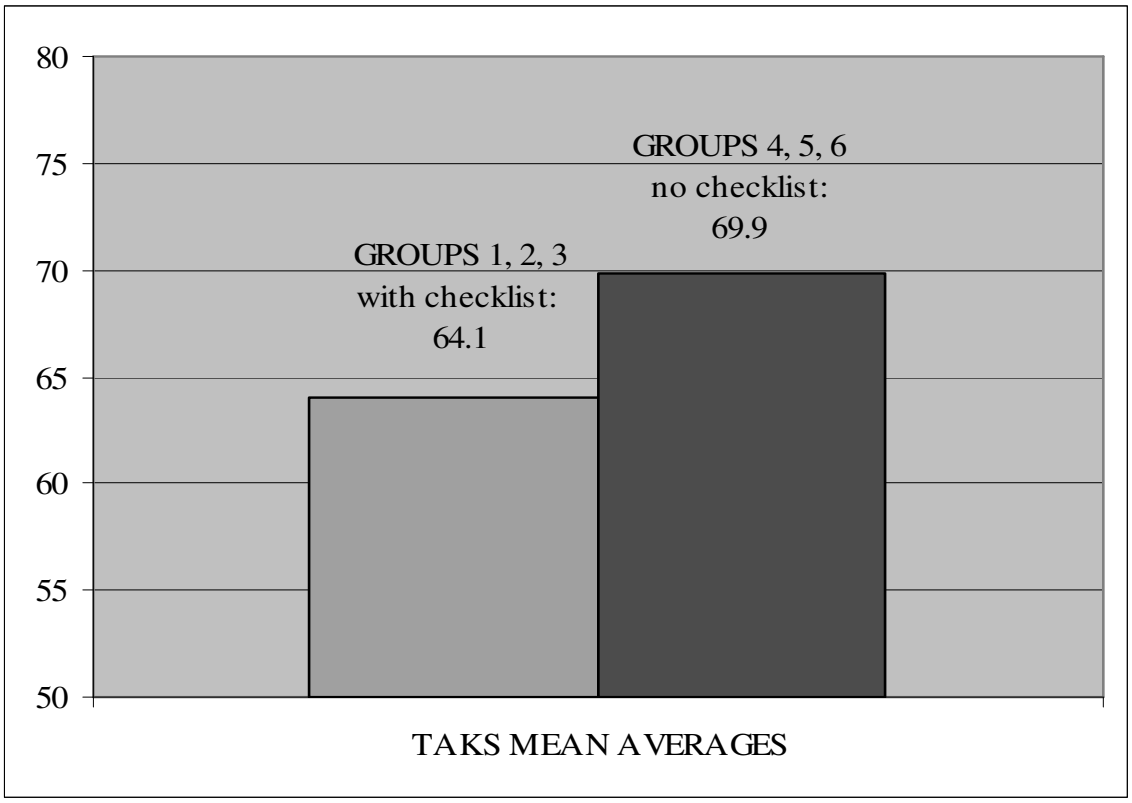


*Figure 1*. TAKS mean differences for checklist condition main effect.

These results indicate a significant difference of almost 6 points on the TAKS scores between the checklist conditions.

*Within Subjects Effects*

Follow-up tests were conducted for within group variables based on the significant multivariate *F* statistics obtained. Examined in these tests were the following:

(1.) the time main effect from pre-test to post-test and

(2.) the time by type of reading condition by checklist condition three-way interaction effect.

Recall that these two effects obtained statistical significance in the multivariate *F*, so further testing was done to pinpoint which dependent variables were influenced by the independent variables.

*Time Main Effect*

Table 11indicates results obtained through the within group univariate analysis for the main effect of time from pre-test to post-test for each of the six dependent measures.

Table 11. *Time Main Effect.*

| Measure | Time | Means | *F* | Sig. |
|---|---|---|---|---|
| DORF | Time 1 | 95.5 | | |
| | Time 2 | 105.2 | 115.452 | .000* |
| RTF | Time 1 | 38.4 | | |
| | Time 2 | 43.7 | 21.579 | .000* |
| NAEP | Time 1 | 2.0 | | |
| | Time 2 | 2.3 | 25.824 | .000* |
| TAKS | Time 1 | 64.4 | | |
| | Time 2 | 69.5 | 11.465 | .001* |
| IRA | Time 1 | 27.1 | | |
| | Time 2 | 26.8 | .650 | .422 |
| MRQ | Time 1 | 2.8 | | |
| | Time 2 | 2.8 | .128 | .722 |

* Significance at the .05 level.

Results of the main effect of time indicated what was expected across time from pre-test to post-test. Because the students were engaged in summer school and involved in a

research intervention, a gain in dependent variable scores from beginning to end of the program was an expected result. The univariate results showed significance for the independent variable of time at $p < .05$ for the ORF, RTF, NAEP, and TAKS variables.

*Three-Way Interaction Effect*

In this study, the interaction effect was of the greatest interest. If a significant multivariate *F* is found, as in this study, the interaction effect can illustrate how the independent variables interact with each other.

Table 12 indicates the results obtained through the within group univariate tests for the three-way interaction between time by reading condition by checklist condition. The observed power is included in these results and was computed using alpha = .05.

Table 12. *Three-Way Interaction Effect.*

| Measure | *F* | Sig. | Observed Power |
|---|---|---|---|
| ORF | .291 | .748 | .095 |
| RTF | 2.566 | .081 | .503 |
| NAEP | 4.927 | .009* | .798 |
| TAKS | .162 | .850 | .075 |
| IRA | .751 | .474 | .175 |
| MRQ | 3.394 | .037* | .628 |

* Significance at the .05 level.

These results indicate a significant three-way interaction effect for the dependent variables of the NAEP and the MRQ. Follow-up univariate and pairwise comparisons were then conducted on these two measures.

*Motivation for Reading Questionnaire.* Table 13 indicates the means for all six groups on the MRQ dependent variables at pre-test and post-test.

Table 13. *MRQ Means for all six groups.*

| Measure | Checklist Condition | Reading Condition | Group | *N* | Pre-Test Mean | Pre-Test *(SD)* | Post-Test Mean | Post-Test *(SD)* |
|---|---|---|---|---|---|---|---|---|
| MRQ | With | Video | One | 20 | 2.6 | (0.6) | 2.7 | (0.6) |
| | With | Audio | Two | 25 | 2.9 | (0.5) | 2.7 | (0.5) |
| | With | Neither | Three | 16 | 2.8 | (0.4) | 2.9 | (0.4) |
| | No | Video | Four | 21 | 2.7 | (0.5) | 2.8 | (0.4) |
| | No | Audio | Five | 11 | 3.0 | (0.3) | 3.0 | (0.3) |
| | No | Neither | Six | 24 | 2.8 | (0.4) | 2.7 | (0.4) |

Recall that preliminary ANOVAs performed on the individual group data yielded no significance between the six intervention groups' means at pre-test or post-test. Figure 2 indicates the changes on the MRQ dependent variable from pre-test to post-test for all six groups involved in the research study.

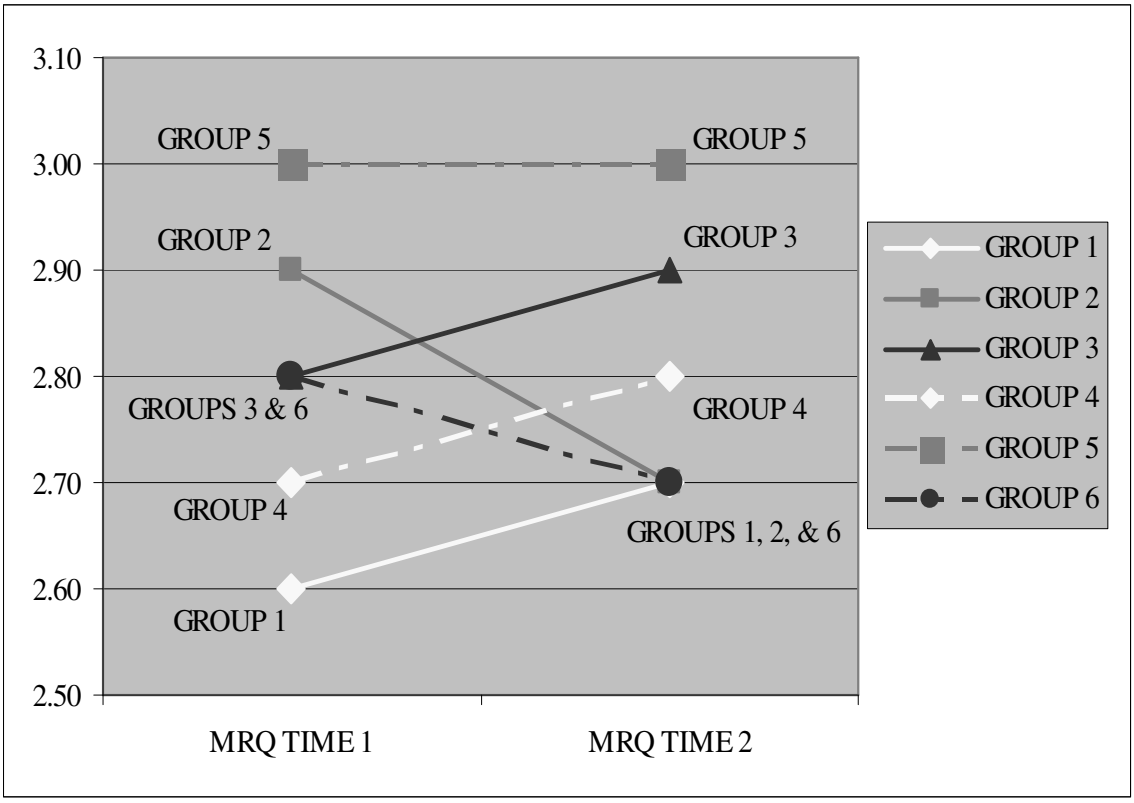


*Figure 2*. MRQ means at pre-test and post-test for all six intervention groups.

Although significant for the three-way interaction effect, there was little or no change across all six groups from Time 1 to Time 2. Groups One, Three, and Four showed a mean increase of 0.10 across time on this dependent variable. Group Five means were identical at pre-test and post-test. Group Six indicated a mean change of –.10, and Group Two showed a decrease on the MRQ with a mean change of –0.20. This information leads to the conclusion that the significance obtained for the three-way interaction effect on the Motivation for Reading Questionnaire may have been strongly influenced by the significant change in Group Two scores across time, $F(1, 24) = 8.177$, $p < .05$.

Multiple pairwise comparisons based on these estimated marginal means were then conducted on the MRQ dependent variable. Table 14 confirms significance on the

reading condition by checklist by time three-way interaction effect for the Motivation for Reading Questionnaire means for Group Two from Time 1 to Time 2.

Table 14. *MRQ Three-Way Interaction Pairwise Comparison.*

| Measure | Reading | Checklist | Time | Means | Mean Diff. | Sig. |
|---|---|---|---|---|---|---|
| MRQ | Video | With | Time 1 | 2.7 | | |
| | | | Time 2 | 2.7 | -.009 | .885 |
| | | No | Time 1 | 2.8 | | |
| | | | Time 2 | 2.8 | -.003 | .958 |
| | Audio | With | Time 1 | 2.9 | | |
| | | | Time 2 | 2.7 | -.176 | 003* |
| | | No | Time 1 | 3.0 | | |
| | | | Time 2 | 3.1 | .107 | .227 |
| | Neither | With | Time 1 | 2.8 | | |
| | | | Time 2 | 2.9 | .084 | .255 |
| | | No | Time 1 | 2.8 | | |
| | | | Time 2 | 2.8 | -.024 | .692 |

* Significance at the .05 level.

Additional significance was concluded between Group Two and Group Five means on the MRQ variable, $p < .05$. Figure 3 illustrates this difference.

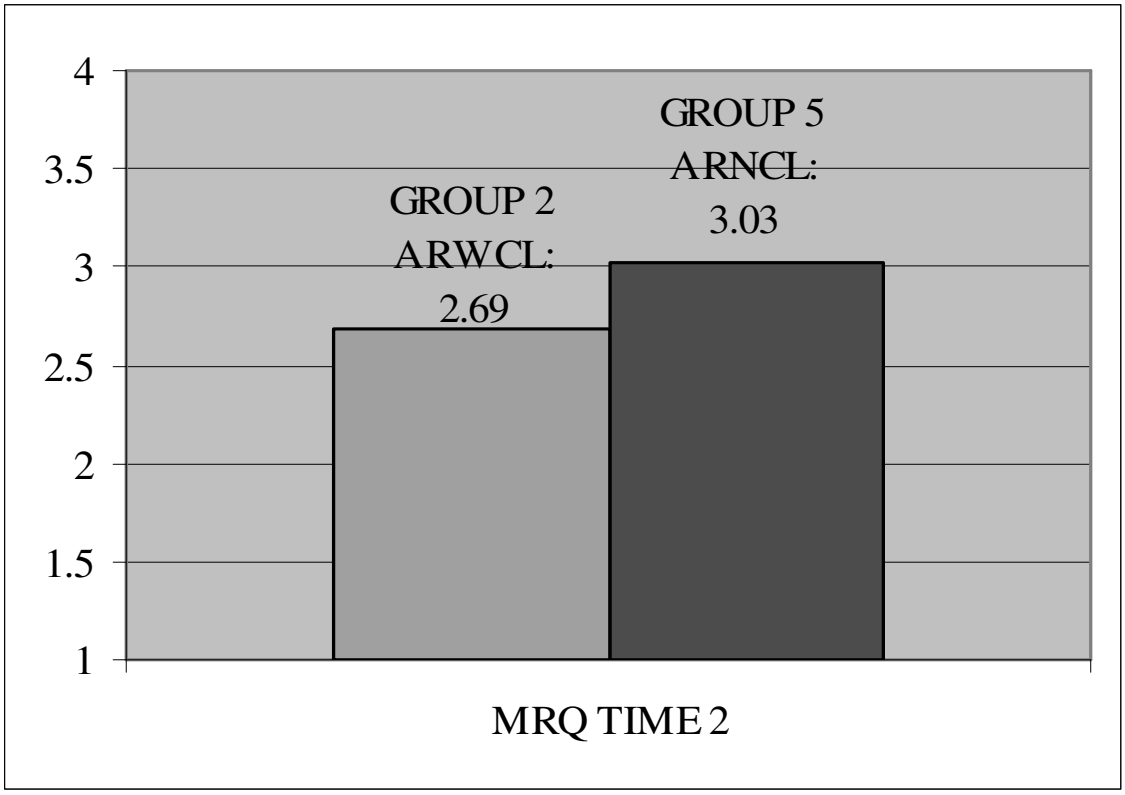


*Figure 3*. MRQ post-test interaction effect between Groups Two and Five.

This graph indicates the significant difference between the two audio recording condition groups on the Motivation for Reading Questionnaire dependent variable at Time 2. The pairwise comparison indicated a significant difference for the audio group without the checklist (Group Five) over the audio group with the self-monitoring checklist (Group Two). The mean difference of –.34 was significant at the $p < .05$ level.

This finding may indicate that the self-monitoring checklist did not increase students' motivation for reading across the intervention period. Recall that the participants in Group Two decreased from pre-test to post-test time on this MRQ measure in a statistically significant way (see Table 14). This decrease in motivation coupled with

the greater sustained mean for Group Five MRQ mean scores may have contributed to this significant overall result.

*NAEP Oral Reading Fluency Scale.* Table 15 indicates means for all groups on the NAEP fluency measure at pre-test and post test.

Table 15. *NAEP Means for all six groups.*

| Measure | Checklist Condition | Reading Condition | Group | *N* | Pre-Test Mean | Pre-Test *(SD)* | Post-Test Mean | Post-Test *(SD)* |
|---|---|---|---|---|---|---|---|---|
| NAEP | With | Video | One | 20 | 2.2 | (0.7) | 2.6 | (0.5) |
| | With | Audio | Two | 25 | 2.1 | (0.6) | 2.1 | (0.4) |
| | With | Neither | Three | 16 | 2.1 | (0.8) | 2.4 | (0.6) |
| | No | Video | Four | 21 | 2.0 | (0.7) | 2.1 | (0.5) |
| | No | Audio | Five | 11 | 1.7 | (0.7) | 2.2 | (0.6) |
| | No | Neither | Six | 24 | 2.1 | (0.6) | 2.5 | (0.4) |

Figure 4 illustrates these pre-test and post test means for the NAEP dependent variable for all six intervention groups.

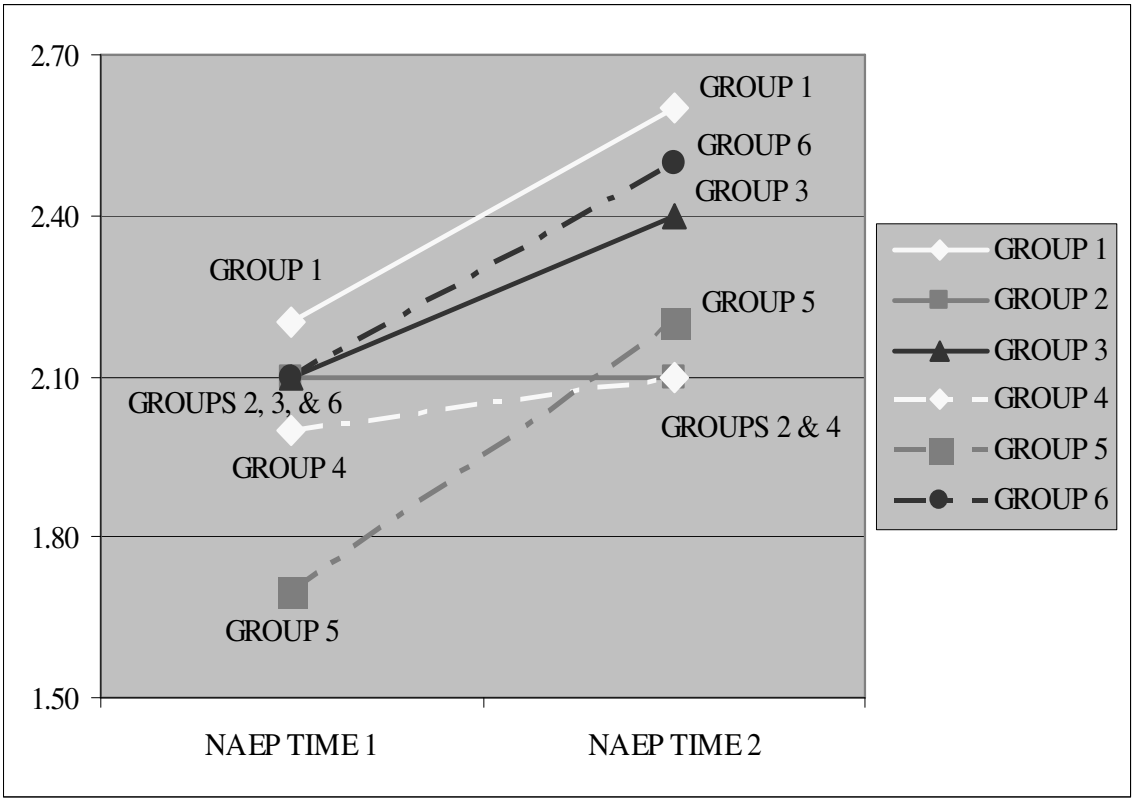


*Figure 4*. NAEP means at pre-test and post-test for all six intervention groups.

Five of the six groups showed an improvement from Time 1 to Time 2 on the NAEP scale. Groups One, Three, Five, and Six showed marked improvement from Time 1 to Time 2, while Group Four (video recorded reading/no checklist condition) indicates a smaller increase. Group Two, the audio recorded reading with checklist condition, shows a flat line from pre-test to post-test time, indicating no overall group improvement.

Multiple pairwise comparisons based on these estimated marginal means were conducted on the NAEP dependent variable. Table 16 indicates the results of the pairwise comparisons when examined for the three-way interaction of reading condition (video, audio, and neither) by checklist condition (with checklist and no checklist) by time on the

National Assessment of Educational Progress Oral Reading Fluency Scale dependent variable.

Table 16. *NAEP Three-Way Interaction Pairwise Comparison 1.*

| Measure | Reading | Checklist | Time | Means | Mean Diff. | Sig. |
|---|---|---|---|---|---|---|
| NAEP | Video | With | Time 1 | 2.2 | | |
| | | | Time 2 | 2.6 | .400 | .001* |
| | | No | Time 1 | 2.0 | | |
| | | | Time 2 | 2.1 | .111 | .353 |
| | Audio | With | Time 1 | 2.1 | | |
| | | | Time 2 | 2.1 | -.067 | .543 |
| | | No | Time 1 | 1.7 | | |
| | | | Time 2 | 2.2 | .455 | .007* |
| | Neither | With | Time 1 | 2.1 | | |
| | | | Time 2 | 2.4 | .271 | .050* |
| | | No | Time 1 | 2.1 | | |
| | | | Time 2 | 2.5 | .431 | .000* |

* Significance at the .05 level.

These results indicate a significant change from Time 1 to Time 2 in the NAEP dependent variable for students in the video recording/with checklist group, Group One, the audio recording/no checklist group, Group Five, and the two rereading groups, both with a checklist, Group Three, and no checklist, Group Six. These reading condition by

checklist by time pairwise comparisons reinforce the significant multivariate *F* found for the main effect of time.

A second pairwise comparison evaluated the differences among rereading conditions within the checklist or no checklist groupings. Table 17 shows the results of this pairwise comparison, highlighting the varying effects of the independent variables of checklist, time, and reading condition on the dependent variables of the NAEP Oral Reading Fluency Scale.

Table 17. *NAEP Three-Way Interaction Pairwise Comparison 2.*

| Measure | Checklist | Time | (I) Reading Condition | (J) Reading Condition | Mean Diff. | Sig. |
|---|---|---|---|---|---|---|
| NAEP | With | Time 1 | Video | Audio | .020 | 1.000 |
| | | | Video | Neither | .042 | 1.000 |
| | | | Audio | Neither | .022 | 1.000 |
| | | Time 2 | Video | Audio | .487 | .005* |
| | | | Video | Neither | .171 | .952 |
| | | | Audio | Neither | -.316 | .163 |
| | No | Time 1 | Video | Audio | .255 | .957 |
| | | | Video | Neither | -.145 | 1.000 |
| | | | Audio | Neither | -.400 | .335 |
| | | Time 2 | Video | Audio | -.088 | 1.000 |
| | | | Video | Neither | -.464 | .008* |
| | | | Audio | Neither | -.376 | .132 |

* Significance at the .05 level.

Results indicated significant differences between Group One (VRWCL) and Group Two (ARWCL) at post-test time on the NAEP Oral Reading Fluency Scale. In addition, significant differences were discovered between Group Four (VRNCL) and Group Six (RRNCL) on the same NAEP dependent variable at Time 2. Figures 5 and 6 further illustrate these significant differences.

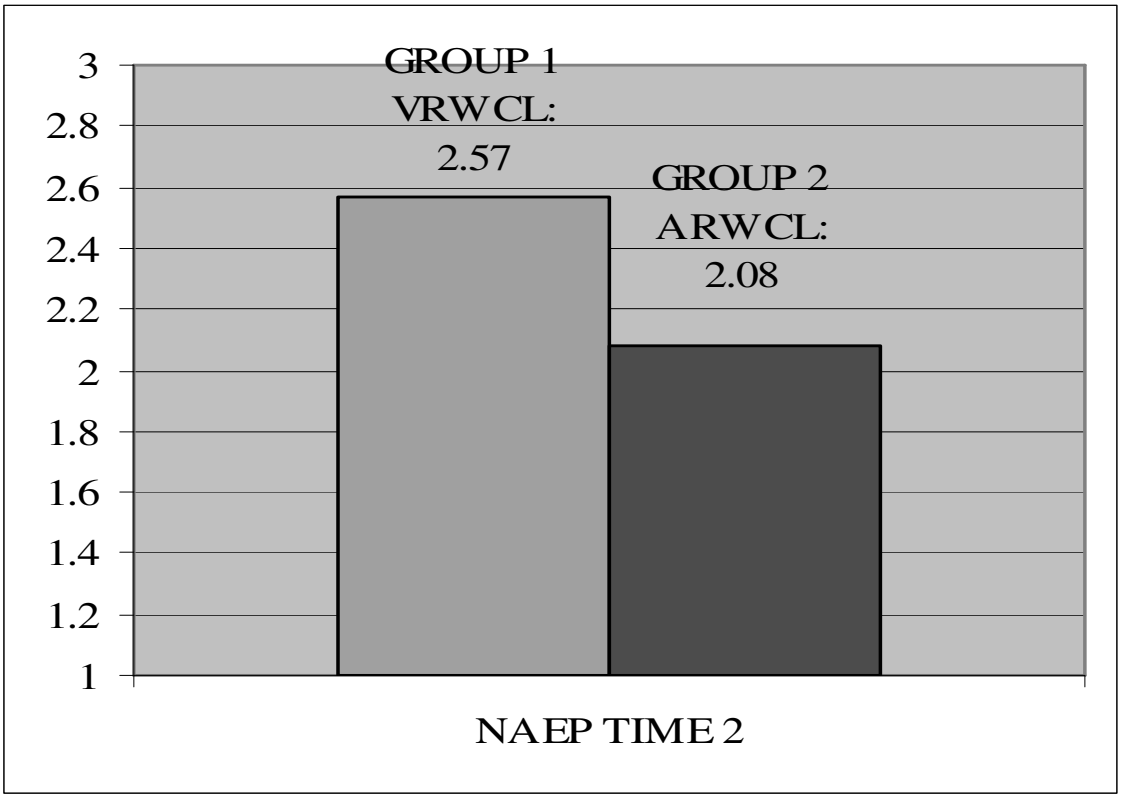


*Figure 5*. NAEP post-test interaction effect between Groups One and Two.

This graph illustrates the significant differences on the NAEP Oral Reading Fluency Scale between two groups within the checklist condition. Group One, the video recorded condition, scored significantly higher ($p < .05$) at post-test time than did Group Two, the audio recorded condition, with a mean difference of .487. This result may indicate that while both groups were involved in self-monitoring their oral reading

fluency through the use of the self-monitoring checklist, the video component may have been a more powerful way of aiding students in their discovery of what needed to be changed from one reading of the text to the next. In addition, it may have been the physical act of reading captured on the video component that helped Group One students think about what they were reading and how they were reading, as opposed to just how they sounded when they were reading.

Although both Group Four and Group Six were in the no checklist condition, Group Six scored significantly higher on the NAEP scale at post-test time than did Group Four participants (see Figure 6).

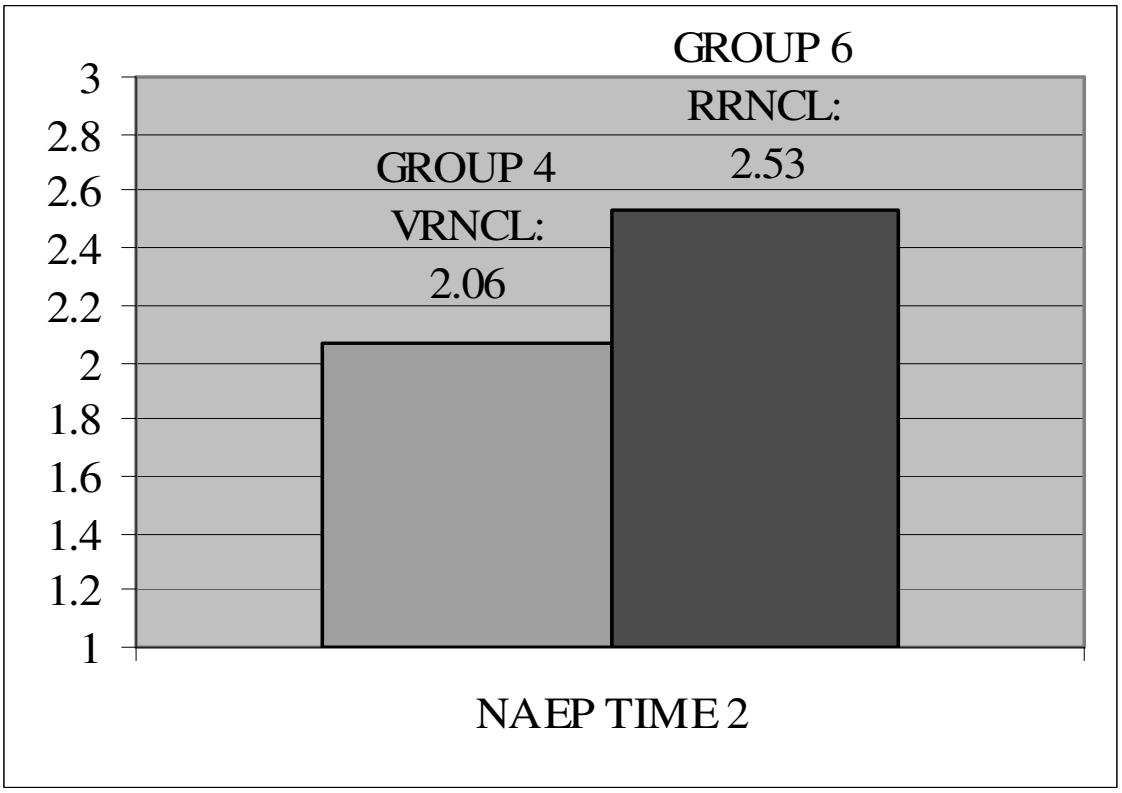


*Figure 6*. NAEP post-test interaction effect between Groups Four and Six.

This graph represents the significant difference at post-test time on the NAEP between two of the no checklist condition groups. Although both groups were assigned to the same no checklist independent variable condition, results indicated that the video recorded condition (Group Four) was significantly lower on this dependent variable at Time 2 than the regular rereading instruction group (Group Six). This mean difference of .464 was significant at the $p < .05$ level.

This result may indicate that video recording component did not increase these students' oral reading fluency and that perhaps the physical act of watching oneself read may not be enough to increase one's ability to read aloud fluently. These students were not responsible for completing a self-monitoring checklist. This resulted in the video recorded students self-monitoring from their video playback and rereading, and the regular rereading instruction participants self-monitoring solely as they completed both readings of the same text.

The final pairwise comparison for the significant three-way interaction between all independent variables was examined between reading condition by time by checklist condition. Table 18 indicates these follow-up pairwise comparisons of the NAEP Oral Reading Fluency Scale based on the estimated marginal means.

Table 18. *NAEP Three-Way Interaction Pairwise Comparison 3.*

| Measure | Reading | Time | (I) Checklist | (J) Checklist | Mean Diff. | Sig. |
|---|---|---|---|---|---|---|
| NAEP | Video | Time 1 | With | No | .214 | .319 |
| | | Time 2 | With | No | .503 | .002* |
| | Audio | Time 1 | With | No | .450 | .072 |
| | | Time 2 | With | No | -.072 | .698 |
| | Neither | Time 1 | With | No | .028 | .900 |
| | | Time 2 | With | No | -.132 | .422 |

* Significance at the .05 level.

When investigating the pairwise comparisons in this manner, there was a significant interaction effect between Group One (VRWCL) and Group Four (VRNCL) at Time 2 on the NAEP scale (see Figure 7).

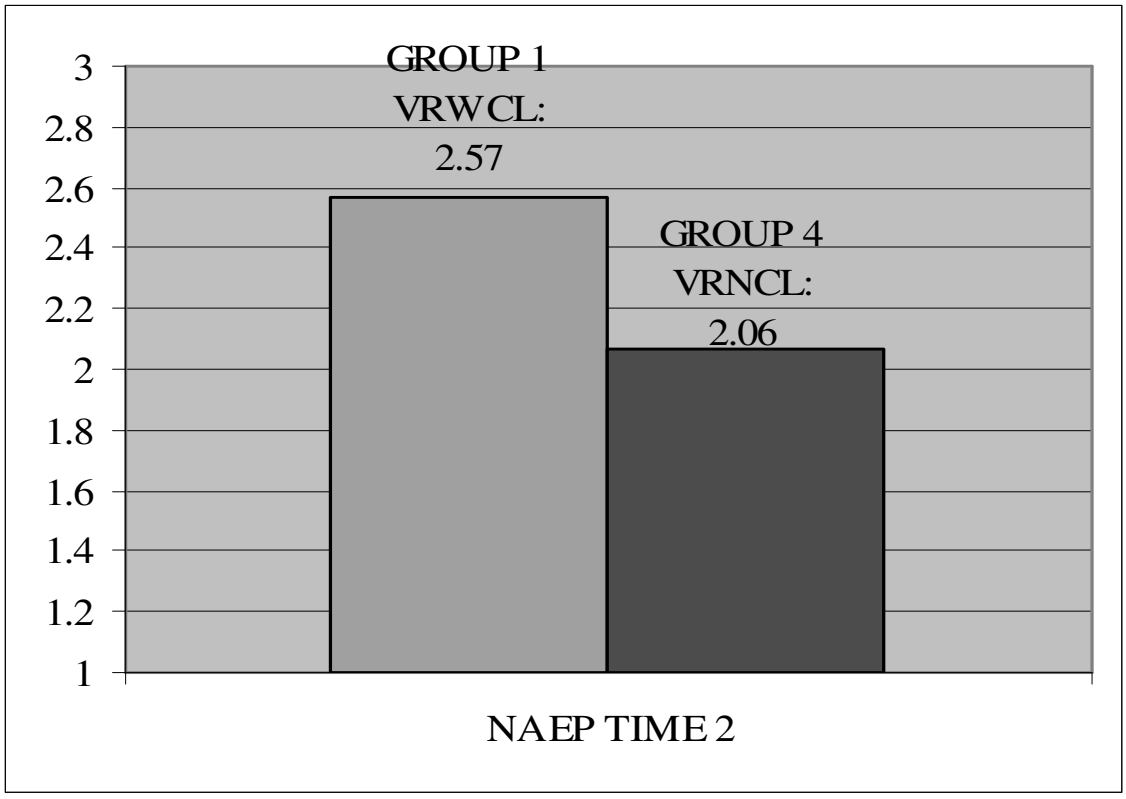


*Figure 7*. NAEP post-test interaction effect between Groups One and Four.

This graph illustrates the mean difference on the NAEP Oral Reading Fluency Scale at post-test time between the two groups assigned to the video reading condition. Group One, the video recorded with self-monitoring checklist condition, scored significantly higher than the video recorded no checklist condition, Group Four. This mean difference of .51 was significant at the $p < .05$ level. This significance may indicate that while the video component was novel and directly represented what the students had done in their first reading of the text, the self-monitoring checklist was necessary to keep the video recorded students on track with their oral reading.

## Part II: Revisiting the Hypotheses

The multivariate analysis was conducted in order to test the main effects as well as the interaction effects of the oral reading fluency intervention on the six different variables involved in the study. The pre-test and post-test measures, the rereading instructional elements, the time component, and the use of the metacognitive self-monitoring checklist were examined in order to measure any differences between and within groups across the research design. These analyses were used to answer hypotheses regarding the outcomes of each component of the oral reading fluency intervention, and are revisited here in order to explore more fully the results of the research study.

*Hypothesis 1.* Prior to the intervention, it was hypothesized that participants in the six treatment groups would show an increase in their scores on all six dependent measures from pre-test to post-time. This prediction was advanced because all students were participating in the fourth-grade summer school program in conjunction with the oral reading fluency intervention.

In fact, students in all six groups increased their scores from pre-test to post-test on only four of the six assessments. The main effect of time was examined in order to test this hypothesis and, indeed, the students improved on the DIBELS Oral Reading Fluency measure, an assessment of reading fluency rate and word accuracy, and on the National Assessment of Educational Progress Oral Reading Fluency Scale, a measure of reading prosody, rate, word identification, and automatic word reading. Students also showed significant improvement over time on the comprehension tasks of the DIBELS Retell Fluency, where they were asked to retell the Oral Reading Fluency passage they had just completed, and on the Texas Assessment of Knowledge and Skills, a statewide mandated

test constructed to test students' comprehension of text passages after they read those passages silently. An increase on these four measures can be attributed to students' involvement in a six-week summer school program and their participation in the oral reading fluency intervention, in which they were required to read aloud each day as part of the research study.

Significant improvements were not obtained on the Index of Reading Awareness or the Motivation for Reading Questionnaire. This lack of increase on these two measures may be attributed to the lack of time allotted for the intervention, so that students could become more aware of their reading as measured on the IRA. In addition, students' lack of motivation for reading, as measured on the MRQ, may be partially attributed to their presence in summer school during six weeks of their summer vacation.

*Hypothesis 2.* The self-monitoring checklist was constructed in order to enhance students' metacognitive awareness of what and how they were reading while they were engaged in text reading. It was considered, therefore, that those students who were required to complete a self-monitoring checklist during fluency instruction would conclude the summer school session with a significant main effect for checklist condition as measured by the Index for Reading Awareness, a test of metacognitive reading awareness. No significance was obtained for any of the three checklist groups (Groups One, Two, and Three) as compared to the three no checklist groups (Groups Four, Five, and Six) involved in the intervention on the IRA measure.

*Hypothesis 3.* It was predicted that students involved in the video rereading condition (Groups One and Four) during the research intervention would have a greater increase in reading metacognition (IRA), reading fluency (DORF and NAEP), and

reading comprehension (RTF and TAKS) than the audio recorded groups (Groups Two and Five) or regular rereading instruction groups (Groups Three and Six). Results indicated that there was not a significant main effect on any of the dependent variables measured between students who watched a video recording before rereading, listened to an audio recording before rereading, or simply reread on any of the six dependent variables.

*Hypothesis 4.* A further hypothesis was that students involved in the video reading condition (Group One and Group Four) would show an increase in oral reading fluency (DORF and NAEP) and motivation to read (MRQ) from Time 1 to Time 2. This two-way interaction effect of time by reading condition did not produce any significant results for the video reading groups when compared to any other reading condition groups.

*Hypothesis 5.* The next prediction tested was that students involved in the video recorded/self-monitoring checklist group (Group One) would show a greater increase for metacognition awareness and reading fluency than all other groups. It was presumed that because students in the video recording intervention group were able to monitor their oral reading and engage in immediate feedback of their reading performance, they would show the greatest increase in their scores on the fluency measures (DORF and NAEP), comprehension measures (RTF and TAKS), and metacognitive measure (IRA). Instead, no significance was obtained for the two-way interaction effect of reading group condition by checklist condition on any of these five measures.

*Hypothesis 6.* An additional hypothesis considered the two-way interaction of time by checklist condition for those three groups with a checklist (Groups One, Two, and Three) versus those without a checklist (Groups Four, Five, and Six) on the Index of

Reading Awareness dependent variable. The prediction was that students who completed a daily checklist throughout theintervention would have the greatest increase in metacognitive awareness during reading from pre-test to post-test as measured on the IRA. No significant two-way interaction was found between the checklist versus no checklist groups across time on the IRA measure.

*Hypothesis 7.* This next hypothesis focused on the three-way interaction effect of the three independent variables, the self-monitoring checklist condition by reading condition by time. It had been predicted that those students assigned to the computer mediated video recording condition with the self-monitoring checklist (Group One) would significantly outperform all other groups on the measures of metacognition (IRA), reading fluency (ORF and NAEP), and comprehension (TAKS and RTF) from Time 1 to Time 2.

Results of the MANOVA indicated a significant *F* for the three-way interaction of reading condition by checklist condition by time, so follow-up univariate and pairwise comparisons were completed to explore this hypothesis. Of the five dependent measures relevant to this hypothesis, univariate tests indicated significance only on the NAEP Oral Reading Fluency Scale. Results of the pairwise comparisons on the NAEP scale indicated that the mean for Group One students was the highest at Time 2 and was significantly higher than Group Two students (ARWCL) and Group Four students (VRNCL). Significance was not obtained on any other dependent variable measure by Group One students.

*Hypothesis 8.* An additional hypothesis tested was that students involved in the video recorded/self-monitoring checklist group (Group One) would show a greater

increase for motivation to read than all other groups. It was presumed that because students in the video recording intervention group were able to monitor their oral reading and engage in immediate feedback of their reading performance, they would show the greatest increase over time in their scores on the Motivation for Reading Questionnaire. Indeed, the only groups that showed an increase on the MRQ from pre-test to post-test were Groups Three (RRWCL) and Five (ARNCL), and neither increase was statistically significant.

*Hypothesis 9.* The final prediction tested in this intervention study was whether participation in an oral reading fluency intervention would lead to an increase in motivation to read. It was thought that within all six intervention groups, students would show an increase in their motivation for reading from pre-test to post-test. Because motivation for reading has been defined as a multidimensional construct related directly to students' reading frequency and overall reading performance and because students in the intervention groups were able to engage in the active process of reading and rereading of text, it was thought that they might show an increase in their scores on the Motivation for Reading Questionnaire over time.

Indeed, this was not the case with this research intervention. While there was a significant *F* reported in the multivariate test on the MRQ, subsequent univariate tests and pairwise comparisons showed no support for this hypothesis. Instead, the univariate test concluded that there was a significant decrease in motivation for reading with Group Two students over time (students in the audio recorded/with checklist group). This univariate result may have been a major factor in the significant multivariate F.

## Part III: Exploratory Analyses

The nature of this intervention was to build on students' oral reading fluency in order to enhance their abilities to read smoothly and accurately at a proper rate and with correct prosody and intonation, supporting the author's syntax while appreciating and understanding what they were reading. Research has shown that students need to develop accurate word identification and fluency in connected text reading in order to obtain meaning from print (Snow, Burns, & Griffin, 1998). Without these skills and fluency development, it will be difficult for a student to remember what has been read (National Reading Panel, 2002). In addition, students who do not achieve fluent performance in these critical reading components may have difficulty learning new skills and strategies, and eventually may lose the motivation and attention necessary to achieve future reading objectives (Binder, Haughton, & Bateman, 2002).

In this segment of the results section, I will investigate hypotheses that were not set forth prior to the intervention implementation, but rather have developed as result of data analysis, implementation reflection, and intervention observation. The driving force behind these exploratory analyses was to discover if students who improved on their oral reading fluency throughout the intervention experienced any other improvements or achievement gains related to their progress in fluency development. Given the reciprocal relationship between fluency and comprehension, it was reasonable to compare fluency performance with the Retell Fluency and the Texas Assessment of Knowledge and Skills comprehension measures. In addition, I wanted to examine if students' motivation to read increased relative to their improvement in oral reading fluency. Finally, I wanted to the

compare the relationship between students' gains in oral reading fluency with their ability to be more metacognitively aware during reading.

To examine students' gains across time, I devised a rubric to identify students who had achieved a certain level of proficiency on both fluency measures and compared them with students who had not met that criterion. In order to determine what requirement would be adequate for achievement on the NAEP scale and DORF measure, I looked at the length of summer school (six weeks) versus the number of weeks in a typical school year (about 36 weeks). I concluded that if students increased their oral reading fluency by 8% or more in a six week period, one could expect that they might increase by 48% over the course of an average school year. This 8% per six-week period would provide students the opportunity to increase their oral reading fluency achievements from the 25th percentile to the 75th percentile throughout their fourth grade school year. Therefore, students in this fluency intervention who had achieved at least an 8% increase on both fluency measures (DORF and NAEP) were compared to students who had not.

In addition, I thought it appropriate to remove those students from the data set who did not require any fluency development. Oral reading fluency norms concluded that fourth-grade students' end-of-year fluency rates should be at 123 WCPM for students performing at the 50th percentile (Hasbrouck & Tindal, 2005). Because the expectations were to increase oral reading fluency, 16 students who were already reading at an average fourth-grade level at pre-test were removed from the data set. Of the remaining 101 students in the data set, 37 students achieved the set 8% criterion on the DORF and NAEP assessments from pre-test to post-test and 64 students did not.

The preliminary step in the data analysis was to complete one-way ANOVAs on the pre-test data to indicate if there were significant differences at pre-test time between these two groups on the dependent variable means. Weinfurt (2000) suggests this comparison prior to completing analyses of covariance on experimental designs in which individual subjects are not randomly assigned to groups because means that are significant at pre-test time should not be covaried in further analyses, but instead should be analyzed through gain scores analyses. However, it is statistically more powerful to conduct an ANCOVA on means that are not significantly different at pre-test in order to evaluate the group effect (Maxwell & Delaney, 1990). There were significant differences at pre-test on both the NAEP Oral Reading Fluency Scale and the Retell Fluency measure at $p < .05$ between the criterion group and the group that did not meet the 8% fluency gain. Therefore, gain score ANOVAs rather than ANCOVAs were used to analyze differences between the two groups on these two variables. No other significant differences at pre-test were determined for the remaining four dependent variables.

Gain score ANOVAs completed on the NAEP means indicated statistical differences between the criterion group and students who did not meet the 8% fluency criterion on the NAEP Oral Reading Fluency Scale at $p < .05$. This result was not surprising because it simply confirmed that the criterion students were more fluent in their oral reading as measured by the NAEP scale across time. The gain score analysis on the RTF measure did not yield significant differences between the two groups at post-test.

Because the DORF variable was the second criterion variable used to identify the individuals who had met the 8% increase, I expected a significant difference on the analysis of covariance that compared the two groups' DORF post-test results. Indeed, the

DORF measure showed significant differences between the two groups at $p < .05$. I then proceeded with further variable analyses. I completed univariate analyses of covariance on the TAKS, IRA, and MRQ variables using the data sets for the 101 students. By using the pre-test scores as covariates, I was able to analyze the post-test scores between groups and look for mean differences on these dependent variables at Time 2.

TAKS comprehension assessment data from the 101 students were compared, regardless of rereading or checklist conditions, in order to explore differences between students who achieved the 8% increase criterion with students who had not. For the TAKS measure, there was no statistically significant difference between participants who achieved the specified criterion of 8% increase as compared with those participants who did not.

In addition to comparing the comprehension measures for individuals who had or had not posted fluency gains, I was also interested in looking at increases in metacognitive awareness during oral reading across time. An important component of this research was the metacognitive tool that was created to enhance students' oral reading fluency. To investigate the relationship between fluency increases and metacognitive awareness during reading, I compared the criterion group scores on the Index of Reading Awareness with the IRA means of the students who did not meet the fluency increase criterion.

Results indicated a significant difference in the metacognitive awareness scores on the IRA for students who increased across time on the fluency measures when compared to those students who did not increase their oral reading fluency scores by at least 8% across time, $F(1,98) = 4.099$, $p < .05$. This significance concluded that students

who increased their oral reading fluency in words correct per minute as well as their oral reading prosody may be more metacognitively aware during reading than students who did not increase in both fluency components.

The final analysis of covariance was aimed at measuring differences between the two groups on their motivation for reading by comparing post-test scores on the Motivation for Reading Questionnaire. I considered that an increase in fluency achievement for those students meeting the 8% increase criterion may have had a significant, positive impact on their motivation for reading. Instead, there were no significant differences between the criterion group scores and the scores for students that did not show significant fluency gains at post-test on the MRQ.

# Chapter 5

## DISCUSSION

Fluency is a key component in effective reading instruction (National Reading Panel, 2000) and should be a primary focus in the teaching of reading. Oral reading practice can aid in the development of students' abilities to read automatically, efficiently, and with proper expression (Rasinski, 2003). It would seem that when students read connected text fluently, the overarching goal of comprehension would become more likely. By reducing the level of cognitive energy that is directed at decoding individual words and phrases, readers can apply their efforts to questioning their comprehension and ultimately understanding the text.

This research study was aimed at finding new and innovative ways for students at the fourth-grade level to increase their oral reading fluency. A main tool that was introduced in this intervention was a self-monitoring checklist that aimed to help students reflect on their oral reading fluency. In addition, computer movie programs and audio recording devices were introduced as contemporary ways for students to engage in text rereading.

Data were obtained from fourth-grade students in who participated in four weeks of oral reading fluency intervention a summer school session. Students completed a set of pre-test and post test measures examining students' oral reading fluency competencies, their reading comprehension, the metacognitive awareness that they exhibited during reading, and their motivation to read.

## Intervention Effects on Reading Outcomes

Findings from the data analysis of this research intervention did not support the initial research expectations. Although some students were given opportunities to implement modern technologies and utilize a metacognitive self-assessment tool, the results for the six dependent variables measured indicated that the simplest rereading of text without additional tools or checklists was as effective across time as each of the treatment innovations. Through examination of each reading component by way of the research construct and analyses, I gained further insight into the existing knowledge base on oral reading fluency and development.

### *Reading Fluency*

In order to assess students' oral reading fluency, all students engaged in oral reading and their words correct per minute were assessed using the Dynamic Indicator of Basic Early Literacy Skills (DIBELS) Oral Reading Fluency (ORF) measure. In addition, each student's DORF readings were recorded and subsequently evaluated using the National Assessment of Educational Progress Oral Reading Fluency Scale.

As students were engaged in oral reading on a daily basis through the intervention treatment group to which they were assigned, it could only be expected that there would be an increase in the scores on the DORF and NAEP scale across time. Such an increase was found, but the expectation that greater gains in oral reading scores would be obtained by those students using the iMovie software innovation, in conjunction with the self-monitoring checklist, was not met.

There were no significant differences in the post-test scores between any of the six intervention groups on the DORF measure. The expectation that the video recorded

innovation would impact oral reading in a significant way was not supported. Instead, all groups showed improvement in oral reading fluency abilities from pre-test to post-test. This outcome may be attributed to the rereading element that occurred daily for all students in all groups. Perhaps simple rereading of texts led students to become more fluent in their oral reading over time.

In addition, the self-monitoring metacognitive checklist did not have a significant influence on the oral reading fluency outcomes. Instead, all groups showed improvement in oral reading fluency abilities from pre-test to post-test, regardless of checklist condition. This finding may reinforce the previous conclusion that rereading text was enough to help students become more aware of what and how they were reading in order to influence their oral reading fluency abilities across time.

Indeed, there were increases in students' oral reading abilities across time. The DORF measure administered at pre-test indicated an average mean across all students involved in the intervention at 95 words correct per minute (WCPM). That average mean falls in the 25th percentile for fourth grade oral reading fluency achievement at spring benchmark. The overall mean average at post-test time was 105 WCPM, an increase of 9.4% words correct per minute within a 15 day intervention period. An expected average gain for fourth-grade students is between .85 to 1.1 WCPM per week (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993) or 1.0 and 1.5 WCPM per week (Hudson, Lane, & Pullen, 2005). Within the six-week summer school session, predicted gains would have placed the post-test mean between 100.1 and 104.0 WCPM. With a post-test mean of 105 WCPM, this gain in students' fluency scores exceeded expectations.

Recall that normative fourth-grade information suggests between 98 and 152 words read correctly in 1 minute for students achieving between the 25th and 75th percentiles at the end of the school year. Therefore, students scoring ≤ 98 WCPM at pre-test were considered high risk for reading difficulties, and students achieving ≥152 WCPM at pre-test were considered low risk for reading difficulties within the study (Fuchs et al., 1993; Hasbrouck & Tindal, 1992, 2005).

For the students participating in this study, 71 of the 117, or 60.7%, of the students scored ≤ 98 WCPM on the DORF pre-test measure, indicating that the intervention was administered mainly to students considered at-risk for reading difficulties. Only three students (2.6%) in the sample scored ≥152 WCPM on the DORF at pre-test. Post-test scores indicate that 41.9% (49 students) of the sample remained in the high risk category scoring ≤ 98 WCPM, whereas six students' scores were now ≥152 WCPM (5.1%), in the low risk category. Students scoring between the 25th and 75th percentiles, that is, reading at a fourth-grade average, rose from 43 students (36.8%) to 62 students (53.0%) from pre-test to post-test.

The NAEP fluency scale rubric is a four-point rubric designed to score reading fluency on a different measure than words correct per minute. Instead, this scale includes other elements of fluency that cannot be measured with the DORF. Prosody, that is, reading intonation and voice characterization, reading accuracy, and sensitivity to the author's syntax, are considered when evaluating a reader's performance with the NAEP scale. Because students' performance on the three DIBELS Oral Reading Fluency passages were analyzed using this scale, each student received three pre-test and three-

post test scores for each of their readings. These three score were averaged for a mean between 1 and 4.

Level 1 students, that is students with a mean between 1.00 and 1.99 read slowly, word by word, with many pauses and with little or no expression. Level 2 students, students with means from 2.00 to 2.99, began to identify more words automatically and to read in short phrases, although some word-by word reading continued. These students also read with little or no expression. Level 3 students, with means between 3.00 and 3.99, read primarily in longer phrases that preserved the author's syntax. There were occasional hesitations, repetitions, and miscues, but these students identified or decoded most words automatically. Level 4 students who obtained a mean of 4.00 read with expression throughout most of the text, reading in larger, meaningful phrase groups with few repetitions, hesitations, or mistakes.

Significant gains were made over time on the NAEP scale for Group One (video recorded/with checklist), Group Three (regular rereading/with checklist), Group Five (audio recorded/no checklist), and Group Six (regular rereading/no checklist). No patterns emerge from this pre-test to post-test significance between reading or checklist conditions. Specific within subjects gains were achieved at post-test for Group One over Groups Two and Four, and Group Six over Group Four.

While these differences in group means were significant, there was no specific reading condition or checklist condition that could explain the significant differences. Instead, it can be concluded that because Groups Two and Four did not achieve significance on the NAEP from pre-test to post-test, the significant mean difference that

Groups One and Six achieved over time was large enough to result in significant differences overall.

Looking across all groups and across time, there was an increase in students' mean scores for oral reading fluency as measured by the NAEP Oral Reading Fluency Scale. There were 39 students with a mean average at Level 1 on the NAEP scale at pre-test and only 16 students at post-test. Level 2 students' means increased from 54 to 77 across time. There were 24 Level 3 students at pre-test, and 23 at post-test. There were no Level 4 students at pre-test, but one student achieved a Level 4 score at post-test. While there is no research-specific gain score that students are generally expected to achieve over time, the students in this study went from a mean average of 2.06 at pre-test to 2.30 at post-test, an increase of 10.5%.

In order to examine the increases across time on both fluency measures, it is important to look at what the students were asked to do each day and what kind of prompts they received each week. Recall that at the beginning of each of the four intervention implementation weeks, students were reminded of the goals of the fluency project and expectations for their oral reading (see Appendix D). Although it was predicted that the checklist groups would have an advantage over the no checklist groups due to metacognitive guidance via the checklist, it may be concluded that the instructions and reminders presented to the students each week were enough to help them attend to their oral reading fluency. Research has shown that prompting and guiding students' thinking tends to foster reflection, metacognition, and comprehension (Palincsar, 1986). Perhaps within the framework of this research, the weekly oral reading fluency prompting and restating of goals and expectations was sufficient to scaffold students'

metacognitive awareness during implementation of their daily oral reading fluency activities.

Finally, both the DIBELS ORF and the NAEP measures were scored based on texts that differed in story genre and vocabulary. The first passage, "The Youngest Rider," was a historical fiction passage based on the Pony Express. The second passage, "Maid of the Mist," was a narrative tale about a family taking a summer vacation to Niagara Falls. The third passage, "She Reached for the Stars," was written in a biographical style about the female astronomer Maria Mitchell. Fourth-grade students are expected to encounter different text types and the passages on the measures reflected that expectation. However, it is important to note that fluency related activities are very much influenced by text selection and text difficulty (Stahl & Stahl, 2004). The data collected reflect the students' engagement and interest with the text (Paris & Carpenter, 2004) in addition to their ability to read the different selections.

Although students were required to read all three passages, the scores obtained for the DORF in words correct per minute and the scores achieved on the NAEP scale reflected student differences. Recall that there were no significant differences among the six intervention groups at pre-test or post-test. However, further examination of the DIBELS Oral Reading Fluency fourth-grade level passages led to specific conclusions about how text differences may have impacted reading fluency achievement.

Analysis of the three DORF passages supports the research that indicates narrative stories are often preferred by readers over expository or informational texts (Schallert & Reed, 1997). On both the DIBELS Oral Reading Fluency and the NAEP Oral Reading Fluency Scale measures, mean scores across all groups at pre-test and post-

test were highest on the narrative passage, Passage 2. Students read 101 words correct per minute at pre-test and 111 WCPM at post-test. The NAEP scale means were 2.1 at Time 1 and 2.4 at Time 2. Although this passage contained vocabulary words such as "pleasant," "Niagara," and "natural," it was written in a narrative style and in first person, so the students could "get into the story" as if they were telling about a family trip, instead of reading about what happened with this character's family vacation.

Passage 1 was written about a character named Charlie. As I was analyzing the audio tapes to assign a score based on the NAEP scale, I noted many mistakes with the character's name, as well as other vocabulary such as "blistering," "pinto," and "regained." Although the vocabulary presented stumbling blocks for some students, this passage was read with the second highest DORF mean at pre-test (98 WCPM) and at post-test (108 WCPM) across all groups. The NAEP mean was the second highest in the pre-test at 2.0, but was the same as the mean for Passage 3 at post-test, 2.3.

The final passage, "She Reached for the Stars," was a biographical piece that received the lowest mean scores on the DORF measure at pre-test (86 WCPM) and post-test (95 WCPM). The NAEP score for Passage 3 was 1.9 at pre-test. This passage presented several challenges to students at both testing occasions. The vocabulary in the first two paragraphs (these two paragraphs included 108 words) was comprised of the words "sew," "educated," "Nantucket Island," "whaling," "independent," and "encouraged." These were the words that were most often miscalled during the testing. In addition, the character's name, Maria Mitchell, was in the text three times in the first two paragraphs and her first name was present in those two paragraphs two additional times. Although the testers were instructed to count the improper pronunciation of a proper

noun as incorrect only once (as long as the student continued to read the proper name in the same way throughout the passage), hesitations were common throughout the reading of this passage for many students when they arrived at the character's name. Evidence of these hesitations and reading difficulties were observed throughout the testing days and again when the audio tapes were analyzed.

This examination of text selection and comparisons of the DORF passages encourages further investigation into the text types that students are exposed to at the elementary level. Duke and Tower (2004) indicated that a common practice in schools limits reading experiences in grades one through three as "the time to learn to read," and then at fourth-grade students are encouraged to "read to learn." Through experiencing only narrative, and more commonly fictional narrative, text genres, students enter fourth grade with a narrow scope of text availabilities and with limited skills necessary to read informational, biographical, and other nonfiction texts.

Because the focus of this research intervention was to enhance oral reading fluency, it is important to consider effects of text difficulty on fluency development. Text that encourages fluent oral reading should include instructional level text that models natural language patterns and are accessible to the student (Richards, 2000). Recall that the different rereading and self-monitoring conditions implemented in this intervention designed to develop this literacy process all had one thing in common: text. The use of a wide variety of texts and careful text selection can aid and even enhance students' reading achievement as they continue to work toward becoming more fluent readers.

*Reading Comprehension*

In order to measure the students' text comprehension, the DIBELS Retell Fluency (RTF) measure was administered immediately following the DORF reading by calculating the number of words the student accurately retold based on the text reading. The RTF measure was used because story retell is a confirmed method for assessing students' comprehension of text (Fuchs, Fuchs, Hosp, & Jenkins, 2001). This retell measure asks students to recall what they have just read, allowing them 1 minute to retell the text. It is required that students remain on topic and discuss events from the passage with this measure of comprehension. Overall mean differences on this measure increased 13.3% from Time 1 to Time 2, with students recalling an average increase of six words per passage at post-test.

There were no significant differences between groups on this dependent variable. It had been predicted that students who were in the video recorded group with the self-monitoring checklist would show the highest level of increase in comprehension over time. Instead, there was no significant advantage for this reading condition or any other reading or checklist condition from pre-test to post-test on the RTF measure.

Because fluency "may be almost a necessary condition for good comprehension and enjoyable reading experiences" (Nathan & Stanovich, 1991, p. 176), I investigated the means of all groups at pre-test and post-test on the RTF as compared to the fluency scores on the DORF. Expectations were that the DORF passage that received the highest overall fluency means by all six groups would also be the passage that resulted in the highest Retell Fluency means across time. In fact, the passage that scored the highest on the DORF measure (Passage 2, "The Maid of the Mist") received the lowest means on the

RTF at both pre-test (37) and post-test (42). In addition, Passage 3, "She Reached for the Stars," which received the lowest means on the DORF at pre-test and post test measured the highest means across time with 40 words retold at Time 1 and 46 words at Time 2. Passage 1, "The Youngest Rider," was consistently second on the DORF and RTF scores with 38 words retold at pre-test and 45 at post-test.

Another expectation for RTF and DORF agreement was not met with the Retell Fluency means. I presumed that students would achieve the greatest mean on the RTF for the DORF story on which they achieved the highest words correct per minute. This was not the case. At pre-test, only 33% of the students met this accord, 64% of whom were reading at greater than 100 WCPM. At post-test, the percentage of students with DORF and RTF passage accord only rose to 35%, with 77% of these students reading 100 or more WCPM.

Although there is an increase in retell means across time, I cannot present an explanation for the disconnect between the DORF and RTF means. It may be concluded that because the third passage was the last passage in the test administration, students were prepared to retell the story that they read and put more effort into telling longer retells. Because there is no structure to the retell (unless the student pauses for a certain period of time), it may be that the students began repeating what they already had said, but changed the wording or phrasing of their retell. I think this was the case with one student who scored a high retell on passage three with 81 words retold, even though this student only read 42 words correct per minute on the same passage during the DORF administration.

One additional comment on students' Retell Fluency achievement is that this program was not designed to teach text comprehension, and the retelling of stories was not ever a focus in the intervention. Although students were asked if they progressed further in the text during the second read, they were never asked to retell what they had read or even to give a main idea. Therefore, the Retell Fluency administration may have been as novel to many students at Time 2 as it had been at Time 1. Increases in fluency have been linked to improvements in reading comprehension (Carlisle & Rice, 2002; Fuchs, Fuchs, & Maxwell, 1988). To enhance retell production, students should receive practice and training in the retell method (McCormick, 2003), which was not a focus of this intervention.

The Texas Assessment of Knowledge and Skills (TAKS) was also administered at pre-test and post- test time. This test is a gauge of students' ability to comprehend passages once they have been read. Students are required to find main ideas, use context clues to determine word meaning, summarize the text, and apply their inference skills to draw conclusions. This criterion-referenced test is administered to all students in the state of Texas, grades three through twelve. Students in fourth grade are encouraged but not required to pass the TAKS test in order to advance to fifth grade.

Students' scores on the Texas Assessment of Knowledge and Skills improved by 7.2% over time, from an overall mean of 63.9 to 68.9, and the number of students passing the TAKS test rose from 45 students at pre-test to 66 students at post-test. A significant effect was found for the checklist condition, with the no checklist groups (Groups Four, Five, and Six) obtaining a higher overall mean than the groups with a checklist (Groups One, Two, and Three). One-way ANOVAs conducted on the TAKS data showed that

there was a significant difference between the six groups at pre-test, but not at post-test $F(5,111) = 3.747$, $p < .05$. It may be concluded that the significant pre-test data may have been the strongest influence on the overall TAKS significance for the checklist effect.

Although it was not possible to look at specific student TAKS protocols for analysis purposes, it was possible to obtain a copy of the 2004 fourth-grade released TAKS and scoring guide (Texas Education Agency, 2006b). Comprehension questions included in the TAKS required students to use the text to answer explicit and implicit questions and to complete graphic organizers and story maps. Several questions involved making inferential decisions and drawing conclusions. As stated above, the intervention implementation did not include any elements of comprehension strategy development or structured question-and-answer segments on the texts. The summer school reading and language arts teachers devised lessons and instruction based on reading comprehension development. Later in this section, I will discuss teacher differences, specifically in this summer school setting, and examine implications on comprehension achievement in conjunction with teachers' flexibility to plan the scope and sequence for their own lessons.

*Metacognitive Reading Awareness*

The Index of Reading Awareness (IRA) was another measure used before and after the intervention implementation to assess any changes in students' metacognitive awareness during reading (see Appendix E). The IRA showed no significant differences for any of the multivariate tests on which it was evaluated. In order to draw conclusions for this lack of significant increase from pre-test to post-test time, I evaluated the IRA questions and answers more closely.

As a measure of reading awareness, the IRA has some questions about what good readers do as they prepare to read and how good readers act while reading. When training the students in the checklist groups, we discussed oral reading fluency and the need for increased rate over time. Because students were engaged in this individual timed fluency activity, they were told to use context clues to determine word pronunciation as they were reading, but not to spend a great deal of time trying to decode words if they came across words that they were unable to read.

This prompting may have negatively influenced students' metacognitive awareness during reading according to the Index of Reading Awareness, one of the dependent variables that decreased from pre-test to post-test ($M$ = 27.0 at Time 1 and $M$ = 26.7 at Time 2). Question 10 on the IRA asks, "If you had to read very fast and could only read some words, which ones would you try to read?" Because students had been prompted to read words with proper accuracy, rate, and prosody, they might try to read all of the words, but may have come across words that were too difficult for them. The answer choices for Question 10 are: a) Read the new vocabulary words because they are the most important (1 point); b) Read the words that you could pronounce (0 points); and c) Read the words that tell the most about the story (2 points). By prompting the students to read with fluency and proper speed, this specific question outcome may have been affected by .20 at post-test.

Another example of a question that may have been affected negatively by the weekly prompting was Question 7. As students were encouraged to increase their rate and accuracy during reading, they were also reminded that they would read more words during their reread than during their initial read. Question 7 asks, "When you tell other

people about what you read, what do you tell them?" The answer choices were a) What happened in the story (2 points); b) The number of pages in the book (0 points); and c) Who the characters are (1 point). As students completed their fluency activity every day, they were asked if they had read further on their second reading. This may have confused them on the IRA questions because emphasis during fluency instruction was focused on reading more pages rather than on what had happened in the story. In many cases, the students would report to the researchers upon completion of their activity and let them know that they had read further during the reread than they had during the initial read. In some cases, the researchers would prompt the students by asking them, "Did you get further along in the story than you did the first time?" Although reading more pages than during their rereading segment seemed to increase students' involvement in the oral reading fluency activity, this type of encouragement may have negatively impacted the IRA scores at post-test. Question 7 decreased from pre-test to post-test by .12.

Examination of the four executive constructs of evaluation, planning, regulation, and conditional knowledge tested by the IRA at Time 1 and Time 2 provided insight into the students' awareness of their self-regulation during reading. Questions 1 through 5 look at students' ability to evaluate their own understanding as they are working through a text (Jacobs & Paris, 1987). Students' gain score of –.09 at post-test indicate that the intervention did not help students reflect on their ability to understand, summarize, or ask questions during text. Because these items are built from a reading comprehension framework, the explanations for cueing during oral reading fluency may have had a negative effect on this construct. Questions 6 through 10 focused on students' abilities for planning before and during reading. Again, there was a gain score that showed negative

growth over time within this construct (–.35) indicating that students' lack of application of cognitive means to reach the goal of comprehension may have been negatively affected by the oral reading fluency cueing. Both Questions 7 and 10 that were discussed previously fall into this planning construct within the IRA measure. The regulation construct, Questions 11-15, posted a gain score of –.06 at post-test, once again emphasizing the comprehension focus of this measure and how it was negatively affected by the oral reading fluency cueing that occurred weekly.

The final construct of the IRA is conditional knowledge, Questions 16-20. This construct refers to students' awareness of conditions influencing learning, such as *why* strategies are effective when used properly, *when* strategies should be applied in, and *how* they can be used appropriately (Jacobs & Paris, 1987). The conditional knowledge gain score was .17 at post-test, indicating that the strategy training for oral reading fluency used in this intervention may have provided information about why and when students would use strategies to aid in learning situations.

Conclusions from the IRA indicate that future oral reading fluency instruction should include cues regarding strategy instruction and the importance of using strategies for learning, but should not discount that students are working on a specific sub-skill of reading. Index of Reading Awareness outcomes may have been stronger if students had been cued for fluency instructional strategies in addition to being reminded that the goal of reading should ultimately focus on text comprehension.

*Motivation to Read*

Students' motivation to read was measured using the Motivation for Reading Questionnaire (MRQ) at pre-test and post-test (see Appendix F). This last dependent

variable was another measure that decreased across time, although the decrease was very slight overall ($M$ = 2.84 at Time 1 and $M$ = 2.82 at Time 2). Two statements that recorded gains in students' responses from pre-test to post-test were Statements 2 (gain of .26) and 20 (gain of .27). Statement 2 read, "I like hard, challenging books," in the motivational construct of reading challenge. Statement 20 read, "I sometimes read to my parents," in the motivational construct of social reasons for reading. Both of these items showed a higher mean average at Time 2.

The increase in reading challenge may be attributed to the book selection factor. Because I had determined that students would need books for their summer school learning, I had made available many different books, and students were interested in the books that they selected with the research assistants. In fact, several students would choose books after they completed their fluency activity in order to have them held for the next day's reading. Research shows that allowing the reader to choose what is going to be read is one important condition for deep involvement in reading (Schallert & Reed, 1997). Although the goal was to have teachers and students work together to select reading materials, most students enjoyed working with the researchers to select appropriate texts.

One motivational construct, social reasons for reading, is composed of seven statements, four involving family and three involving friends. It is interesting that at post-test time, all of the familial statements means had increased between .12 and .27 average points, whereas all of the other statements (in regards to friends) decreased between .11 and .16 average points at post-test. This is noteworthy because this intervention took place in summer school where all fourth graders from all fourteen district elementary

school were brought together and placed in different classroom environments. The students were not likely to know very many of their classmates in their summer school class. This outcome may have differed if the intervention had taken place in a school environment where students already knew one another and were able to participate in reading activities with fellow classmates instead of other summer school students.

Two statements that measured declines on the Motivation for Reading Questionnaire from pre-test to post-test were Statements 26, "I usually learn difficult things by reading," and 36, "I like to get compliments for my reading." Statement 36 (reading recognition construct) decreased at post-test by .17. Statement 26 (reading challenge construct) decreased at post-test by .20. Of the five statements in the reading recognition category, all but one of them decreased from pre-test to post-test. Statement 29, "I am happy when someone recognizes my reading," increased, whereas the other statements, regarding friends and teachers complimenting reading, declined. The reading challenge construct also contains five statements on the MRQ. The only other statement that showed negative mean change over time (–. 06) was Statement 44, "If the project is interesting, I can read difficult material."

The two overall MRQ statements that posted the largest change across time were both in the reading work avoidance construct. Statement 52 that reads, "I don't like it when there are too many people in the story," posted a mean difference of –.38 at post-test whereas statement 27, "I don't like vocabulary questions," posted a .39 gain score across time. Recall that this construct requires all statements to be reverse scored because it negatively correlates with motivation. Therefore, a negative gain score on this Statement 52 indeed indicates that the students were less motivated from Time 1 to Time

2 to read stories when there were multiple characters in the story. In addition, a positive gain score on Statement 27 concludes that students did not dislike vocabulary questions at post-test time as strongly as they did at pre-test.

Looking at the separate statements and constructs within the Motivation for Reading Questionnaire provided some insight into students' motivation to read across time during the summer school session. There were no definitive constructs or overall means that led to specific conclusions, but, again, it would be interesting to complete an oral reading fluency intervention during the regular school year when students are with their homeroom teachers and classmates to investigate if there is an impact from the intervention on their motivation for reading.

## Additional Effects on Intervention Outcomes

Intervention outcomes have been discussed related to components of reading and literacy instruction. Indeed fluency, comprehension, metacognition, and motivation to read are all important constructs in teaching and learning the art of reading. However, the outcomes within these constructs cannot be thoroughly concluded without a consideration of teacher impacts and summer school factors. The next segment of this discussion section is focused on student performance based on both teacher influences and summer school dynamics.

### *Teacher Impacts*

In addition to strong, positive correlations between high-quality teaching and high student achievement in reading, and substantial teacher effects on elementary school students' academic growth in reading (Gallagher, 2004; Rowan, Correnti, & Miller, 2002), research has substantiated that teacher differences can impact students'

achievement by as much as one full grade level within a single year (Hanushek, 1992). These teacher variations can include such key differences as pedagogical content knowledge, feedback to students during instruction, and training students to monitor their own performances (Clarridge, 1990; Darling-Hammond, Berry, & Thoreson, 2001; Laczko-Kerr & Berliner, 2002, 2003; Morgenegg, 1989). In addition to content and instructional disparities, research indicates that strong motivational differences in teachers' perceptions of their students directly influence students' behaviors and academic achievements (Sweet, 1997).

Teacher effectiveness is a serious concern when gauging and monitoring student achievement during the regular school year. Throughout my study, I was aware that because teachers and students were not familiar with one another, several teachers did not appear to be as vested in students' achievement as they might have been during the regular school year. This lack of accountability was heightened by the fact that fourth-grade students were not required to achieve passing grades on their class work or statewide mandated testing during this summer school in order to advance to fifth grade. This is not to say that the teachers were consistently negative or were not teaching day-to-day during the summer school session. Teacher attendance was high, and teaching occurred daily. The level of involvement of the teachers and students in the lessons was the more prominent indicator that there were instructional differences between classes.

Daily observational records indicate that there were strong discrepancies between teachers and teacher motivational attitudes in all six groups. The teacher involved with the Group One intervention group was highly organized and structured. Students were not allowed to talk once they arrived in her room, and there were specific rules and

consequences for speaking out of turn or not finishing assignments. While this teacher's pedagogical content knowledge and adherence to rules were high (she holds certifications for teaching in elementary self-contained and teaching reading to grades 1 through 8), the nurturance and democratic actions that Sweet (1997) deemed necessary for motivational classroom interactions and high engagement in learning were not a part of this teacher's repertoire. Group Six, on the other hand, had a highly energetic teacher that embodied care for her students and their learning. She also had high pedagogical content knowledge about the reading and language arts processes that she was teaching to her students (she is certified in teaching in elementary self-contained, teaching English, and teaching English as a Second Language to grades 1 through 8). It was easy to tell that this teacher perceived that her students were capable of success in her class. Her support of their learning, coupled with her ability to lead her students toward autonomy in learning, created a much different classroom environment and, thus, affected the results of her teaching.

While teacher differences and teachers' motivational perceptions of students abilities are not the only factors that impact students' literacy learning, the outcomes of this intervention may indicate that teacher differences and teacher impacts do play a role in students' academic achievement.

*Summer School Impacts*

Paris, Wasik, and Turner (1996) concluded that high-achieving students tend to believe that they have control over their academic success, which leads them, in turn, to consistently achieve success. Having reflected on this statement, consider what the students in this summer school believed about their academic successes and control over

their achievement. In addition, their motivation to achieve success may have been low as well. It has been suggested that struggling students tend to have lower levels of self-efficacy for academic tasks (Johnston & Winograd, 1985).

When compared to academic gains made during the regular school year, gains achieved in summer school are much smaller by comparison (Bracey, 2002). Research conducted on students attending summer school in England found no differences in achievement at the start of the regular school year between students who had attended summer school and students who had not (Sainsbury et al., 1998). Additional research competed by Cooper et al. (2000) concluded that summer school is a place where students can achieve and learn if it is highly structured and there is accountability for both teachers and students. The summer school where I completed my study had some of the aspects necessary to be a successful place for students to learn, but did not have the accountability or parental support that Cooper et al. (1996) concluded would support high quality summer school learning. Positive elements of the summer school session were that schedules were highly organized and were followed, teachers were consistently at school, and teaching occurred daily for the 23 summer school days. Unfortunately, because the accountability was low, student attendance was consistently low for several intervention groups, and there were no set guidelines for lesson plans or what students should be achieving in their daily literacy lessons.

## Limitations

Original program goals indicated that this intervention implementation would best be served over a ten-week period, with the first and final weeks reserved for testing and training and the remaining eight weeks applied for fluency intervention purposes. Due to

time constraints and district concerns regarding time spent on fluency instruction, the program proposal was accepted for a six-week summer school intervention instead. Although the outcomes from this research may be replicated through further research and practice, my concern is that ideal implementation of this research intervention study was not fully achieved within the limited time span.

Another major limitation of this research intervention that differed from the original program goal was that of text selection and text inclusion in the study. In order to increase student achievement with text, it is important that students are placed with instructional-level or independent-level texts (Stahl & Stahl, 2004). Instructional-level texts are texts in which the student will read 90-94% of all of the words correctly and independent-level texts refer to accuracy of 95% or greater. In order to achieve the proper text levels for each individual student, it had been proposed that the teachers and students would decide and agree on a suitable text prior to each day's participation in the fluency intervention. Although the students and researchers chose texts together for the purposes of this intervention, ideal text selection would have occurred between classroom teachers who know their students well, and students who know their teachers and are able to express their interests and expectations more completely.

As this was a summer school setting and the teachers and students were not familiar with one another prior to the start of school, it was not possible to have them work together in order to choose an appropriate level text. In addition, text content was not able to be decided upon through consensus between the teacher and student. Instead, the research assistants and I aided in the text selection for each daily intervention implementation with the students in each treatment condition. If students were heard

struggling with a text at a specific level, a lower level text was selected with that student for the next day. In addition, if a student was heard reading a text with little enthusiasm or enjoyment, a new text subject was suggested for the next fluency lesson. Although the students were still engaged in text selection with another individual, this process was not what I had planned to increase student interest and participation in the fluency activities.

Teacher participation in the project was not simply limited in the area of text selection. There is a vast difference in dynamics between summer school student/teacher relationships and those relationships formed during the regular school year. In this summer school, over 100 fourth-grade students were brought together from the 14 elementary schools in one Texas district. Twelve teachers were brought in to teach summer school at the fourth-grade level, six of whom were fourth-grade teachers during the regular school year (three of those teachers taught math and three taught reading during the summer school session).

One significant way in which teacher participation differed in the summer school setting was the classroom class set-up and class library. Because the summer school took place at a local district middle school, all teachers were displaced from their elementary homeroom settings and put into a middle school classroom. The reading teachers were given three texts to work with through the summer, leveled by low, middle, and high readers. Only two of the six reading teachers brought additional reading materials to the class during the first two weeks of school. In many cases, the books that I supplied were the only outside reading materials that the students had the opportunity to read during as many as three of the six weeks. Some teachers who brought in additional reading books did so only for their own use for teacher-led read alouds. At one point, one teacher

indicated that she had many great books in her classroom at her elementary school, but that she did not have the "energy to drag them all to her middle school classroom." This attitude and lack of materials may have been a factor that limited the effect of this research intervention and may have detracted from the motivation of the fourth-grade students.

Another limitation of this study was the misunderstanding about fluency and the importance of fluency development in literacy development demonstrated by both the teachers and the students involved in this intervention. Considering that fluency instruction has only recently received specific focus as an essential element in reading acquisition (Samuels, 2006), it is not surprising that the participants in this study were not familiar with fluency terms, strategies, and goals. One teacher in particular reported to me at the conclusion of the study that she would not use rereading as a strategy to help students increase their oral reading fluency (even though she had implemented partner rereading for an additional 20 minutes daily during weeks three through six of summer school). It can be concluded that while best practices for what should be done in the classroom, such as the partner rereading, are being put into place, there is limited awareness as to *why* they are best practices and *why* they should be implemented. Regarding this lack of knowledge of fluency and fluency acquisition, a specific restriction of placing all of the intervention focus on fluency and the components of fluency development separate from comprehension development may have been a strong limitation of this research study.

One additional limitation of this research study was the lack of an appropriate fluency metacognitive reading inventory. Although the Index of Reading Awareness is a

quality tool for measuring metacognitive reading awareness within comprehension constructs, I am concerned that the goals of the intervention implementation were not adequately measured. As previously mentioned, several of the items on the IRA may have been affected by the fluency instruction prompting and the goals of the fluency intervention program.

The development of metacognition during fluency development requires the teaching and learning of strategies that coincide with desired outcomes. In comprehension metacognitive development, strategy instruction is intended to encourage students to be more aware of their understanding of what they are reading (Garner, 1988). A more effective measure of fluency metacognitive awareness during oral reading may have provided a clearer picture of the intervention students' self-monitoring growth across time.

## Implications for Future Research

Attention to oral reading fluency instruction is increasing as more and more educators are recognizing the importance of fluent reading as a major component in reading acquisition. Reading fluency is gaining notoriety as an essential element of every reading program (Hudson, Lane, & Pullen, 2005). It is important that further research into metacognitive aspects of fluency in addition to self-regulatory and self-reflective strategies during oral reading is explored.

One aspect of the research that was measured but not used in any way was the weekly fluency probes that the students engaged in with an independent tester. Recall that students were monitored on the last day of each intervention week (four times across the whole of the summer school) in order to measure their progress in oral reading fluency as

a response to the intervention implementation. While these scores were recorded and distributed to teachers in order to enhance their literacy instruction, the scores were not included in the data set forth here. While this is a limitation in the breadth of what is reported, another research limitation is that the students were not able to graph their weekly progress and were, therefore, not as motivated as they may have been if they were tied to the weekly charting and data monitoring of their own progress monitoring scores (Metsala, Wigfield, & McCann, 1996/1997; McCormick, 2003).

Although several technological innovations were utilized in this research intervention, results indicate that rereading of text is an adequate way to achieve oral reading fluency gains. Although students were pleased to have the opportunity to use computers and video cameras to record and view their individual oral reading, this video condition did not enhance the results of the gains across time.

Still, it is important not to discount the idea of enhancing reading fluency by providing students with new and innovative ways to read aloud. Implications derived from this research intervention in which students were required to work towards their oral reading fluency goals in the same way every day may be that flexible fluency instruction is vital. Perhaps some of the more performance-oriented approaches to fluency development such as Readers' Theatre (Worthy & Prater, 2002) and Radio Reading (Opitz & Rasinski, 1998; Rasinkski, 2003) may provide the creativity and novelty to keep oral reading fluency development exciting and interesting to students.

As literacy providers look toward the improvement of students' reading achievement and fluency development, perhaps the most though-provoking implication of this intervention is that by adhering to fluency development that enhances repeated

readings of text, students can continue to achieve in their oral fluency endeavors without the cost of computers, software, and digital cameras.

One final implication for future research not investigated here is an investigation into the students involved in summer school sessions and how their involvement in these sessions impacts their academic growth. As further analyses were conducted on data collected across time from the intervention participants and as summer school research was investigated, a resemblance between the type of students in this summer school and the type of students who are *generally* in summer school became apparent. Because the outcome of my study was affected by the types of students participating in summer school, it seems that more intensive research regarding summer school effects on students' achievement may serve to benefit students and educators as they plan and participate in future summer school learning environments.

Appendix A

**NAME: _____ DATE: ___ - ___ - 2005**

| Fluency Self-Monitoring Checklist | | | |
|---|---|---|---|
| Place a check [√] in the appropriate box ***after*** viewing your reading video. | **Always** | **Sometimes** | **Never** |
| ---------- Did I pause or hesitate when I was reading?-- | | | |
| ---------- Did I repeat words when I was reading?-- | | | |
| ---------- Did I pay attention to sentence punctuation? -- | | | |
| ----------Did I read at an appropriate rate?-- | | | |
| ----------Did I lose my place when I was reading? -- | | | |
| ----------Did I read with proper volume? -- | | | |
| ----------Did I read clearly? -- | | | |
| ----------Did I use expression when I was reading? -- | | | |

Here are UP TO **three** words that I want to work on:

_____ _____ _____

**VRWCL** Now, go on to your **rereading**!

**NAME: _____ DATE: ___ - ___ - 2005**

| Fluency Self-Monitoring Checklist<br>Place a check [√] in the appropriate box<br>***after*** listening to your reading recording. | **Always** | **Sometimes** | **Never** |
|---|---|---|---|
| ---------- Did I pause or hesitate when I was reading?-- | | | |
| ---------- Did I repeat words when I was reading?-- | | | |
| ---------- Did I pay attention to sentence punctuation? -- | | | |
| ----------Did I read at an appropriate rate?-- | | | |
| ----------Did I lose my place when I was reading? -- | | | |
| ----------Did I read with proper volume? -- | | | |
| ----------Did I read clearly? -- | | | |
| ----------Did I use expression when I was reading? -- | | | |

Here are UP TO **three** words that I want to work on:

_____ _____ _____

**ARWCL** Now, go on to your **rereading**!

**NAME: _____ DATE: ___ - ___ - 2005**

| Fluency Self-Monitoring Checklist<br>Place a check [√] in the appropriate box ***after*** reading. | **Always** | **Sometimes** | **Never** |
|---|---|---|---|
| ---------- Did I pause or hesitate when I was reading?-- | | | |
| ---------- Did I repeat words when I was reading?-- | | | |
| ---------- Did I pay attention to sentence punctuation? -- | | | |
| ----------Did I read at an appropriate rate?-- | | | |
| ----------Did I lose my place when I was reading? -- | | | |
| ----------Did I read with proper volume? -- | | | |
| ----------Did I read clearly? -- | | | |
| ----------Did I use expression when I was reading? -- | | | |

Here are UP TO **three** words that I want to work on:

_____ _____ _____

**RRWCL** Now, go on to your **rereading**!

Appendix B

## An Oral Reading Fluency Scale

(Modified from the National Assessment of Educational Progress)

- Level 4: The student reads with expression throughout most of the text, reading in larger, meaningful phrase groups. Repetitions, hesitations, or mistakes are rare. The student appears very comfortable reading the text.

- Level 3: The student reads primarily in longer phrases that preserve the author's syntax. Although there may be occasional hesitations, repetitions, and miscues, most words are identified or decoded automatically. The student is beginning to read with expression and more comfort.

- Level 2: The student is beginning to identify more words automatically and to read in short phrases. Some word-by-word reading continues. The student reads with little or no expression, and there may be long pauses and frustration with unfamiliar words.

- Level 1: The student reads slowly and word by word, with many pauses and with little or no expression. Few words are identified automatically. The student may seem frustrated.

Adapted from:
The National Center for Education Statistics (1995)

As cited in:
Worthy, J., Ivey, M. G., & Broaddus, K. (2001). *Pathways to independence: Reading writing, and learning in grades 3–8*. New York: The Guilford Press.

Appendix C

Treatment Condition: Video Recording with a Checklist

REMEMBER

1. Set your timer for two minutes
2. Have your book open to the first page of the book or chapter

Starting the Camera

1. Turn the switch on the camera to the "camera" position
2. Look to see that the iMovie (Version 4.0) software has recognized the camera (the blue screen will read "Camera Ready to Record")

Beginning the Video Recording Component

1. Go to BOTH volume controls and turn them down ALL THE WAY
2. Click on the picture of the camera at the bottom left of the screen
3. Click the "Import" button under the picture screen
4. START your TIMER
5. Begin reading

How to View Your Reading

1. Once your timer starts to beep, stop the timer and click on the "Import" button under the recording screen again
2. Click on the picture of your video clip on the right of the screen
3. TURN THE VOLUME up under the screen and in the upper right hand corner of the computer monitor
4. Click on the PLAY arrow under the picture screen
5. Watch and listen to your video-recorded reading

NEXT…complete the checklist.

THEN…reread the SAME text starting in the EXACT same place for 2 more minutes. HOW? Set your timer for two minutes, start the timer, start reading, STOP when the timer goes off. Stop the timer, close your book, and place your checklist in the box.

You have completed your oral reading fluency work for the day! ☺

Treatment Condition: Video Recording, No Checklist

REMEMBER

1. Set your timer for two minutes
2. Have your book open to the first page of the book or chapter

Starting the Camera

1. Turn the switch on the camera to the "camera" position
2. Look to see that the iMovie (Version 4.0) software has recognized the camera (the blue screen will read "Camera Ready to Record"

Beginning the Video Recording Component

1. Go to BOTH volume controls and turn them down ALL THE WAY
2. Click on the picture of the camera at the bottom left of the screen
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5. Begin reading

How to View Your Reading

1. Once your timer starts to beep, stop the timer and click on the "Import" button under the recording screen again
2. Click on the picture of your video clip on the right of the screen
3. TURN THE VOLUME up under the screen and in the upper right hand corner of the computer monitor
4. Click on the PLAY arrow under the picture screen
5. Watch and listen to your video-recorded reading

THEN…reread the SAME text starting in the EXACT same place for 2 more minutes. HOW? Set your timer for two minutes, start the timer, start reading, STOP when the timer goes off. Stop the timer & close your book.

You have completed your oral reading fluency work for the day! ☺

Treatment Condition: Audio Recording with a Checklist

REMEMBER

1. Set your timer for two minutes
2. Have your book open to the first page of the book or chapter

Starting the Audio Recorder

1. Press the REC button on the recorder (the play button should go down at the same time)
2. Wait a few seconds and then START your TIMER
3. Begin reading into the recorder

How to Listen to Your Reading

1. Once your timer starts to beep, stop the timer and press the STOP button on the recorder
2. Push the REW button until you reach the beginning of YOUR tape
3. Listen to your recorded reading
4. Push the STOP button once you get to the end of your reading

NEXT…complete the checklist.

THEN…reread the SAME text starting in the EXACT same place for 2 more minutes. HOW? Set your timer for two minutes, start the timer, start reading, STOP when the timer goes off. Stop the timer, close your book, and place your checklist and tape in the appropriate boxes.

You have completed your oral reading fluency work for the day! ☺

Treatment Condition: Audio Recording, No Checklist

REMEMBER

1. Set your timer for two minutes
2. Have your book open to the first page of the book or chapter

Starting the Audio Recorder

1. Press the REC button on the recorder (the play button should go down at the same time)
2. Wait a few seconds and then START your TIMER
3. Begin reading into the recorder

How to Listen to Your Reading

1. Once your timer starts to beep, stop the timer and press the STOP button on the recorder
2. Push the REW button until you reach the beginning of YOUR tape
3. Listen to your recorded reading
4. Push the STOP button once you get to the end of your reading

THEN…reread the SAME text starting in the EXACT same place for 2 more minutes. HOW? Set your timer for two minutes, start the timer, start reading, STOP when the timer goes off. Stop the timer, close your book, and place your tape in the box.

You have completed your oral reading fluency work for the day! ☺

Treatment Condition: Rereading with a Checklist

REMEMBER

1. Set your timer for two minutes
2. Have your book open to the first page of the book or chapter

Directions for Reading

1. Start your timer
2. Begin reading the passage
3. Read for 2 minutes
4. Stop reading when the timer begins beeping
5. Stop the timer

NEXT…complete the checklist.

THEN…reread the SAME text starting in the EXACT same place for 2 more minutes. HOW? Set your timer for two minutes, start the timer, start reading, STOP when the timer goes off. Stop the timer, close your book, and place your checklist in the box.

You have completed your oral reading fluency work for the day! ☺

Treatment Condition: Rereading, No Checklist

REMEMBER

1. Set your timer for two minutes
2. Have your book open to the first page of the book or chapter

Directions for Reading

1. Start your timer
2. Begin reading the passage
3. Read for 2 minutes
4. Stop reading when the timer begins beeping
5. Stop the timer

THEN…reread the SAME text starting in the EXACT same place for 2 more minutes. HOW? Set your timer for two minutes, start the timer, start reading, STOP when the timer goes off. Stop the timer & close your book.

You have completed your oral reading fluency work for the day! ☺

Appendix D

## Student Refresher Training

## Video Recording with a Checklist

Every day when you are reading, I want you to think about *why* and *how* you are reading. BEFORE you read, you should plan ahead. Think about what type of book you are reading and how your reading should sound. Think about this…IF someone was listening to you or watching you as you read, what could you do to make your reading better? Remember when we watched and listened to the boy reading on the video? We talked about how he looked and how he sounded as he was reading.

We watched him read two times. The first time he read, he was very fluent and easy to understand. That means that he read at a good rate or speed, with proper volume, and that he did not make many mistakes. His second reading was more difficult to understand because he did not read as fluently or as clearly. Think about what made him easier to understand the first time he read. Then think about how you can make yourself easier to understand while you are reading. While *you* are reading, listen to *what* you are reading and *how* you are reading it. This is called monitoring your oral reading fluency.

AFTER you finish reading, you have a chance to reread and improve your oral reading fluency skills by thinking about how you looked and sounded as you read the first time.

Remember, you have a checklist that helps you monitor your oral reading. Think about the questions that you will be asked to answer on the checklist BEFORE you begin reading in order to plan *how* you will read your book. Do you have any questions?

## Student Refresher Training

## Video Recording, No Checklist

Every day when you are reading, I want you to think about *why* and *how* you are reading. BEFORE you read, you should plan ahead. Think about what type of book you are reading and how your reading should sound. Think about this…IF someone was listening to you or watching you as you read, what could you do to make your reading better? Remember when we watched and listened to the boy reading on the video? We talked about how he looked and how he sounded as he was reading.

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AFTER you finish reading, you have a chance to reread and improve your oral reading fluency skills by thinking about how you looked and sounded as you read the first time. Do you have any questions?

Student Refresher Training

Audio Recording with a Checklist

Every day when you are reading, I want you to think about *why* and *how* you are reading. BEFORE you read, you should plan ahead. Think about what type of book you are reading and how your reading should sound. Think about this…IF someone was listening to you read, what could you do to make your reading better? Remember when we listened to the boy reading on the audio tape? We talked about how he was reading and how he sounded as he was reading.

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While *you* are reading, listen to *what* you are reading and *how* you are reading it. This is called monitoring your oral reading fluency. AFTER you finish reading, you have a chance to reread and improve your oral reading fluency skills by thinking about how you sounded when you read the first time.

Remember, you have a checklist that helps you monitor your oral reading. Think about the questions that you will be asked to answer on the checklist BEFORE you begin reading in order to plan *how* you will read your book. Do you have any questions?

Student Refresher Training

Audio Recording, No Checklist

Every day when you are reading, I want you to think about *why* and *how* you are reading. BEFORE you read, you should plan ahead. Think about what type of book you are reading and how your reading should sound. Think about this…IF someone was listening to you read, what could you do to make your reading better? Remember when we listened to the boy reading on the audio tape? We talked about how he was reading and how he sounded as he was reading.

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While *you* are reading, listen to *what* you are reading and *how* you are reading it. This is called monitoring your oral reading fluency. AFTER you finish reading, you have a chance to reread and improve your oral reading fluency skills by thinking about how you sounded when you read the first time. Do you have any questions?

Student Refresher Training

Rereading with a Checklist

Every day when you are reading, I want you to think about *why* and *how* you are reading. BEFORE you read, you should plan ahead. Think about what type of book you are reading and how your reading should sound. Think about this…IF someone was listening to you read, what could you do to make your reading better? Remember when we listened to the boy reading on the audio tape? We talked about how he was reading and how he sounded as he was reading.

We listened to him read two times. The first time he read, he was very fluent and easy to understand. That means that he read at a good rate or speed, with proper volume, and that he did not make many mistakes. His second reading was more difficult to understand because he did not read as fluently or as clearly. Think about what made him easier to understand the first time he read. Then think about how you can make yourself easier to understand while you are reading.

While *you* are reading, listen to *what* you are reading and *how* you are reading it. This is called monitoring your oral reading fluency. AFTER you finish reading, you have a chance to reread and improve your oral reading fluency skills by thinking about how you read the first time.

Remember, you have a checklist that helps you monitor your oral reading. Think about the questions that you will be asked to answer on the checklist BEFORE you begin reading in order to plan *how* you will read your book. Do you have any questions?

Student Refresher Training

Rereading, No Checklist

Every day when you are reading, I want you to think about *why* and *how* you are reading. BEFORE you read, you should plan ahead. Think about what type of book you are reading and how your reading should sound. Think about this…IF someone was listening to you read, what could you do to make your reading better? Remember when we listened to the boy reading on the audio tape? We talked about how he was reading and how he sounded as he was reading.

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While *you* are reading, listen to *what* you are reading and *how* you are reading it. This is called monitoring your oral reading fluency. AFTER you finish reading, you have a chance to reread and improve your oral reading fluency skills by thinking about how you read the first time. Do you have any questions?

Appendix E

NAME: _____ DATE: ____-____-2005

**INDEX of READING AWARENESS (IRA)**

**Circle the letter in front of the statement that you agree with the MOST.**

1. What is the hardest part about reading for you?
    a. Sounding out the hard words.
    b. When you don't understand the story.
    c. Nothing is hard about reading for you.

2. What would help you become a better reader?
    a. If more people would help you when you read.
    b. Reading easier books with shorter words.
    c. Checking to make sure you understand what you read.

3. What is special about the first sentence or two in a story?
    a. They always begin with "Once upon a time…"
    b. The first sentences are the most interesting.
    c. They often tell what the story is about.

4. How are the last sentences of a story special?
    a. They are the exciting, action sentences.
    b. They tell you what happened.
    c. They are harder to read.

5. How can you tell which sentences are the most important ones in a story?
    a. They're the ones that tell the most about the characters and what happens.
    b. They're the most interesting ones.
    c. All of them are important.

6. If you could only read some of the sentences in the story because you were in a hurry, which ones would you read?
    a. Read the sentences in the middle of the story.
    b. Read the sentences that tell you the most about the story.
    c. Read the interesting, exciting sentences.

7. When you tell other people about what you read, what do you tell them?
    a. What happened in the story.
    b. The number of pages in the book.
    c. Who the characters are.

8. If the teacher told you to read a story to remember the general meaning, what would you do?
    a. Skim through the story to find the main parts.
    b. Read all of the story and try to remember everything.
    c. Read the story and remember all of the words.

---

9. Before you start to read, what kind of plans do you make to help you read better?
    a. You don't make any plans. You just start reading.
    b. You choose a comfortable place.
    c. You think about why you are reading.

---

10. If you had to read very fast and could only read some words, which ones would you try to read?
    a. Read the new vocabulary words because they are important.
    b. Read the words that you could pronounce.
    c. Read the words that tell the most about the story.

---

11. What things do you read faster than others?
    a. Books that are easy to read.
    b. When you've read the story before.
    c. Books that have a lot of pictures.

---

12. Why do you go back and read things over again?
    a. Because it is good practice.
    b. Because you didn't understand it.
    c. Because you forgot some words.

---

13. What do you do if you come to a word and you don't know what it means?
    a. Use the words around it to figure it out.
    b. Ask someone else.
    c. Go on to the next word.

---

14. What do you do if you don't know what a whole sentence means?
    a. Read it again.
    b. Sound out all of the words.
    c. Think about the other sentences in the paragraph.

---

15. What parts of the story do you skip as you read?
    a. The hard words and parts you don't understand.
    b. The unimportant parts that don't mean anything for the story.
    c. You never skip anything.

16. If you are reading a story for fun, what would you do?
    a. Look at the pictures to get the meaning.
    b. Read the story as fast as you can.
    c. Imagine the story like a movie in your mind.

17. If you are reading for science or social studies, what would you do to remember the information?
    a. Ask yourself questions about the important ideas.
    b. Skip the parts you don't understand.
    c. Concentrate and try hard to remember it.

18. If you are reading for a test, which would help the most?
    a. Read the story as many times as possible.
    b. Talk about it with somebody to make sure you understand it.
    c. Say the sentences over and over.

19. If you are reading a library book to write a book report, which would help you the most?
    a. Sound out words you don't know.
    b. Write it down in your own words.
    c. Skip the parts you don't understand.

20. Which of these is the best way to remember a story?
    a. Say every word over and over.
    b. Think about remembering it.
    c. Write it down in your own words.

Adapted from:

Jacobs, J. E., & Paris, S. G. (1987). Children's metacognition about reading: Issues in definition, measurement, and instruction. *Educational Psychologist, 22*(3 & 4), 255-278.

Appendix F

NAME: _____ DATE: ____-____-2005

**MOTIVATION for READING QUESTIONNAIRE-Revised (MRQ)**

Directions: I am interested in your reading. The statements tell how some students feel about reading. Read each statement and decide whether it talks about a person who is like you or different from you. There are no right or wrong answers. I only want to know how you feel about reading.

*Here are three examples*:

If the statement is *very different from you*, circle a 1.

If the statement is *a little different from you*, circle a 2.

If the statement is *a little like you*, circle a 3.

If the statement is *a lot like you*, circle a 4.

| | VERY DIFFERENT FROM ME | A LITTLE DIFFERENT FROM ME | A LITTLE LIKE ME | A LOT LIKE ME |
|---|---|---|---|---|
| A. I like ice cream. | 1 | 2 | 3 | 4 |
| B. I like to swim | 1 | 2 | 3 | 4 |
| C. I like spinach. | 1 | 2 | 3 | 4 |

**Circle ONE ANSWER for each question, using these answer choices:**

1 = VERY DIFFERENT FROM ME
2 = A LITTLE DIFFERENT FROM ME
3 = A LITTLE LIKE ME
4 = A LOT LIKE ME

| | | VERY DIFFERENT FROM ME | A LITTLE DIFFERENT FROM ME | A LITTLE LIKE ME | A LOT LIKE ME |
|---|---|---|---|---|---|
| 1 | I visit the library often with my family. | 1 | 2 | 3 | 4 |
| 2 | I like hard, challenging books. | 1 | 2 | 3 | 4 |
| 3 | I know that I will do well in reading next year. | 1 | 2 | 3 | 4 |
| 4 | I do as little schoolwork as possible in reading. | 1 | 2 | 3 | 4 |
| 5 | If the teacher discusses something interesting, I might read more about it. | 1 | 2 | 3 | 4 |
| 6 | I read because I have to. | 1 | 2 | 3 | 4 |
| 7 | I like it when the questions in books make me think. | 1 | 2 | 3 | 4 |
| 8 | I read about my hobbies to learn more about them. | 1 | 2 | 3 | 4 |
| 9 | I am a good reader. | 1 | 2 | 3 | 4 |
| 10 | I read stories about fantasy and make believe. | 1 | 2 | 3 | 4 |
| 11 | I often read to my brother or my sister. | 1 | 2 | 3 | 4 |
| 12 | I like being the only one who knows an answer in something we read. | 1 | 2 | 3 | 4 |
| 13 | I read to learn new information about topics that interest me. | 1 | 2 | 3 | 4 |
| 14 | My friends sometimes tell me I am a good reader. | 1 | 2 | 3 | 4 |
| 15 | I learn more from reading than most students in the class. | 1 | 2 | 3 | 4 |
| 16 | I like to read about new things. | 1 | 2 | 3 | 4 |
| 17 | I like hearing the teacher say I read well. | 1 | 2 | 3 | 4 |
| 18 | I like being the best at reading. | 1 | 2 | 3 | 4 |

| | | VERY DIFFERENT FROM ME | A LITTLE DIFFERENT FROM ME | A LITTLE LIKE ME | A LOT LIKE ME |
|---|---|---|---|---|---|
| 19 | I look forward to finding out my reading grade. | 1 | 2 | 3 | 4 |
| 20 | I sometimes read to my parents. | 1 | 2 | 3 | 4 |
| 21 | My friends and I like to trade things to read. | 1 | 2 | 3 | 4 |
| 22 | It is important for me to see my name on a list of good readers. | 1 | 2 | 3 | 4 |
| 23 | I don't like reading something when the words are too difficult. | 1 | 2 | 3 | 4 |
| 24 | I make pictures in my mind when I read. | 1 | 2 | 3 | 4 |
| 25 | I always do my reading work exactly as the teacher wants it. | 1 | 2 | 3 | 4 |
| 26 | I usually learn difficult things by reading. | 1 | 2 | 3 | 4 |
| 27 | I don't like vocabulary questions. | 1 | 2 | 3 | 4 |
| 28 | Complicated stories are no fun to read. | 1 | 2 | 3 | 4 |
| 29 | I am happy when someone recognizes my reading. | 1 | 2 | 3 | 4 |
| 30 | I feel like I make friends with people in good books. | 1 | 2 | 3 | 4 |
| 31 | My parents often tell me what a good job I am doing in reading. | 1 | 2 | 3 | 4 |
| 32 | Finishing every reading assignment is important to me. | 1 | 2 | 3 | 4 |
| 33 | I like mysteries. | 1 | 2 | 3 | 4 |
| 34 | I talk to my friends about what I am reading. | 1 | 2 | 3 | 4 |
| 35 | If I am reading about an interesting topic, I sometimes lose track of time. | 1 | 2 | 3 | 4 |
| 36 | I like to get compliments for my reading. | 1 | 2 | 3 | 4 |
| 37 | Grades are a good way to see how well you are doing in reading. | 1 | 2 | 3 | 4 |

| | | VERY DIFFERENT FROM ME | A LITTLE DIFFERENT FROM ME | A LITTLE LIKE ME | A LOT LIKE ME |
|---|---|---|---|---|---|
| 38 | I like to help my friends with their schoolwork in reading. | 1 | 2 | 3 | 4 |
| 39 | I read to improve my grades. | 1 | 2 | 3 | 4 |
| 40 | My parents ask me about my reading grade. | 1 | 2 | 3 | 4 |
| 41 | I enjoy a long, involved story or fiction book. | 1 | 2 | 3 | 4 |
| 42 | I like to tell my family about what I am reading. | 1 | 2 | 3 | 4 |
| 43 | I try to get more answers right than my friends. | 1 | 2 | 3 | 4 |
| 44 | If the project is interesting, I can read difficult material. | 1 | 2 | 3 | 4 |
| 45 | I enjoy reading books about people in different countries. | 1 | 2 | 3 | 4 |
| 46 | I read a lot of adventure stories. | 1 | 2 | 3 | 4 |
| 47 | I always try to finish my reading on time. | 1 | 2 | 3 | 4 |
| 48 | If a book is interesting, I don't care how hard it is to read. | 1 | 2 | 3 | 4 |
| 49 | I like to finish my reading before other students. | 1 | 2 | 3 | 4 |
| 50 | In comparison to my other school subjects, I am best at reading. | 1 | 2 | 3 | 4 |
| 51 | I am willing to work hard to read better than my friends. | 1 | 2 | 3 | 4 |
| 52 | I don't like it when there are too many people in the story. | 1 | 2 | 3 | 4 |
| 53 | It is very important to me to be a good reader. | 1 | 2 | 3 | 4 |
| 54 | In comparison to other activities I do, it is very important for me to be a good reader. | 1 | 2 | 3 | 4 |

Adapted from:

Wigfield, A., & Guthrie, J. T. (1997). Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology*, *89*, 420–432.

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